DOMESTIC ENGINEERING

A Weekly Record of Progress in Plumbing, Heating, Ventilation and all Matters Pertaining to Domestic Sanitation.

ESTABLISHED 1889

Whole No. 1196. CHICAGO, NOVEMBER 13, 1915. Vol. 73, No. 7.

PUBLISHED ON SATURDAY OF EACH WEEK BY THE
DOMESTIC ENGINEERING COMPANY
407 South Dearborn Street, Chicago.
Address all Correspondence to Chicago Office.
Long Distance Telephone: Harrison 2400.

Eastern Office, 200 Fifth Ave., New York City. Tel. Gramercy 4419.
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TERMS OF SUBSCRIPTION.
United States, Cuba and Mexico, $2.00 per year.
Canada, $3.00 per year. Foreign, $4.00 per year.
Current Copies, 10c each. Back numbers, 25c each.

Entered as Second-Class Matter at the Postoffice at Chicago, Ill.

QUESTIONING THE PLUMBER'S BILL.

IN A rather sarcastic editorial, appearing in a recent issue of the "Portland Oregonian," one of the leading Pacific Coast newspapers, reference is made to the ancient and moss-grown allegation that the plumber's bill is exorbitant and not warranted.

Under the caption, "Elevating the Plumber," the editorial highbrow, who delivered himself of the learned, but dubious observations anent professional compensation, must have deluded himself into the belief that the public of the Pacific Coast would immediately be converted to the firm opinion that the plumber is not worthy of his hire. The editorial reads very smoothly—it sounds fine. Take, for instance the following misguided paragraph:

"Under the present plan our plumbing bills arise to the full dignity of professional service, but when the transition from artisan to doctor of plumbing has been achieved, we shall ask for the gentle surcease of anesthesia, when the bill is brought in for settlement."

Perhaps under the strain of a grilling cross-examination, the journalist, who conceived the foregoing sentiments, might meekly confess that he was only joking, just merely having a little editorial fun at the expense of the plumber. But we would be inclined to doubt this explanation when we pause to consider the veracity of the old proverb that "Many a truth is spoken in jest," or as we should say in this particular case: "Many an attempt at truth is spoken in jest."

Therefore, in our editorial capacity, we hereby take issue with the learned Oregon editor. We have trained our editorial Howitzer upon him, and we are prepared to bombard his views with editorial shrapnel.

We will admit, before opening fire upon our classical Oregon opponent, that it is well-nigh impossible to put him completely out of action. At best we can but find the range of his arguments and hurl some sixteen-inch shells into the very heart of them.

We would suggest that he stroll into the reference library of his newspaper office at Portland and take from the shelves a copy of Dun's or Bradstreet's. Upon a systematic perusal of either of these volumes he will discover, much to his surprise, perhaps, that the very modest ratings of a major percentage of master plumbers do certainly not justify the accusation that the plumber's bill is too high. On the contrary, a little journey among facts and figures may lead him to the intelligent conclusion that the plumber's bill is, after all, really too low. And now to quote another paragraph from the newspaper editorial:

"Harvard students are to enter into the subject of plumbing with considerable zest, for while the subject has not been appended to the curriculum, a generous contributor to the University has set aside a goodly sum to be awarded in annual prizes to each person bringing forward the best theses on plumbing in any of its phases and ramifications. Without doubt the unnamed contributor is none other than the plumbing trust in disguise and the true purpose is to get a chair of plumbing introduced anon. Then the plumber will present bills in keeping with professional standards without exciting undue criticism and comment."

Evidently the Oregon editor never took the trouble to ascertain the real facts about the financial status of the plumber. He merely wrote the editorial upon the theory that the plumber was a rich man whose wealth had been accumulated by extortion and overcharging.

Sewage Disposal by Means of the Septic Tank

Detailed Descriptions with Illustrations of the Construction of an Up-to-Date Septic Sewage Disposal System

By JOSEPH GRAHAM

A CORRECT conception of why he should do certain things in a certain way and the knowledge that he cannot expect results, if he does them in any other way, is often lacking in what is termed the "practical man."

It is, however, of inestimable value to him if he can combine with his practical skill, which he has acquired from experience, the theoretical knowledge, which he may equally secure through a study of his subject.

To the plumber, the question of the installation of a septic tank system for the disposal of sewage, is, primarily,

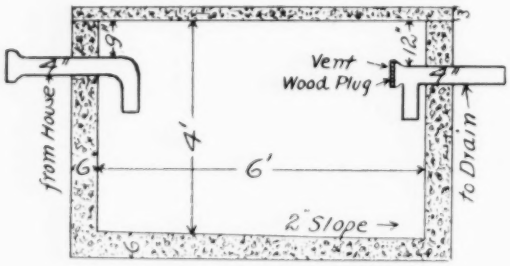


Fig. 1. Septic Tank.

one of the erection of the tank of sufficient size to care for the daily flow of sewage, the arrangement of the disposal field, and the running of the pipe lines from the dwelling; in fact, the installation of the mechanical equipment.

The reason for doing the work in a particular way, as we stated before, is often unknown to him.

Let us, therefore, glance at that part of the subject, which the plumber is often prone to neglect, before entering upon a description of the mechanical details.

Theory of Septic Tank Action.

The largest part of domestic sewage consists of animal matters, comprising albumen, gelatine, etc.; the remainder of the sewage being vegetable matter, such as starch and cellulose.

In treatment, the chief trouble is caused by animal matters, because these matters decompose or putrefy by means of organisms, which perform their work without air. Such bacteria have been named anaerobic, while bacteria which thrive in the air are termed aerobic.

Aerobic bacteria are, also, capable of causing decomposition, the difference being that anaerobic bacteria generate an offensive odor, which is not accompanying the action of the aerobic.

The action of the bacteria upon the sewage in a septic tank is about as follows:

The sewage enters the tank, which should be so built as to exclude light and air, where it is attacked by the anaerobic bacteria, which decomposes it. When such decomposition takes place, CO_2 (carbon dioxide) is set free, while the sewage is reduced to simple compounds, chiefly nitrites. The time allowed for the anaerobic bacteria to perform

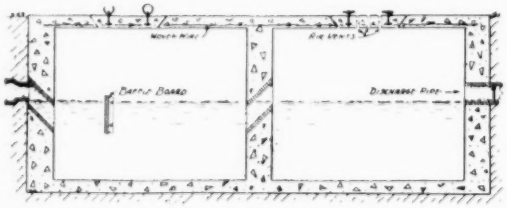


Fig. 2. Lengthwise Section Through Concrete Tank.

this work of breaking up the sewage is generally twenty-four hours.

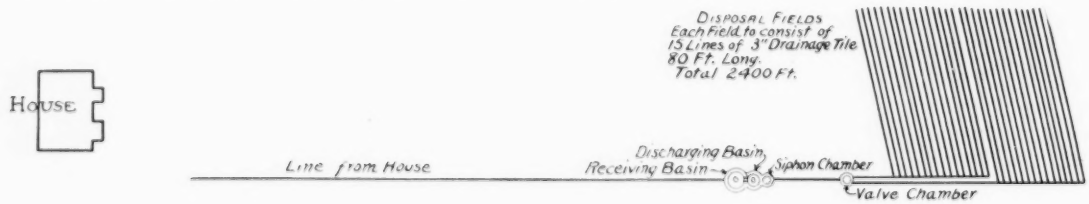
At few places should the sewage remain a longer time in the septic tank, as a longer stay has a tendency to oversepticise it and produce disagreeable odors.

This process being completed, the effluent is discharged into the disposal field, where the final breaking up of the nitrites into nitrates is accomplished through the action of the aerobic bacteria, before referred to.

Details of Septic Tanks.

A small septic tank, capable of serving six people, is shown in Fig. 1. The tank is 4x4x6 feet and is built of concrete, having walls and sides 6 inches thick. It is covered with a concrete slab, 3 inches thick.

The effluent is discharged into a drainage system, composed of common drain tile.



Location of Disposal Fields

Fig. 3.

A larger tank, also of concrete, composed of two sections is shown in Fig. 2. Each compartment of this tank measures 4x4x5 feet. The pit is 4 feet 8 inches deep, 5 feet 4 inches wide and 12 feet long. The tank will accommodate a family of from eight to ten persons.

Thompson, in his book on "Mechanical Equipment of Federal Buildings," states that the general requirements for septic tanks for Federal Buildings, whenever they are

installed, call for tanks which are rectangular and with a depth of liquid of at least 5 feet. They must be of a capacity sufficient to contain all the sewage discharged by the building for a period of eight hours, based on 100 gallons per day per occupant; or on 500 gallons per plumbing fixture per day, if number of occupants is not known.

discharging basin is similar in construction and is 5 feet 6 inches in diameter.

A 3-inch siphon is located in the siphon chamber on the discharge pipe. A 3-inch overflow is shown by-passed around this.

The discharge pipe is branched into two separate lines,

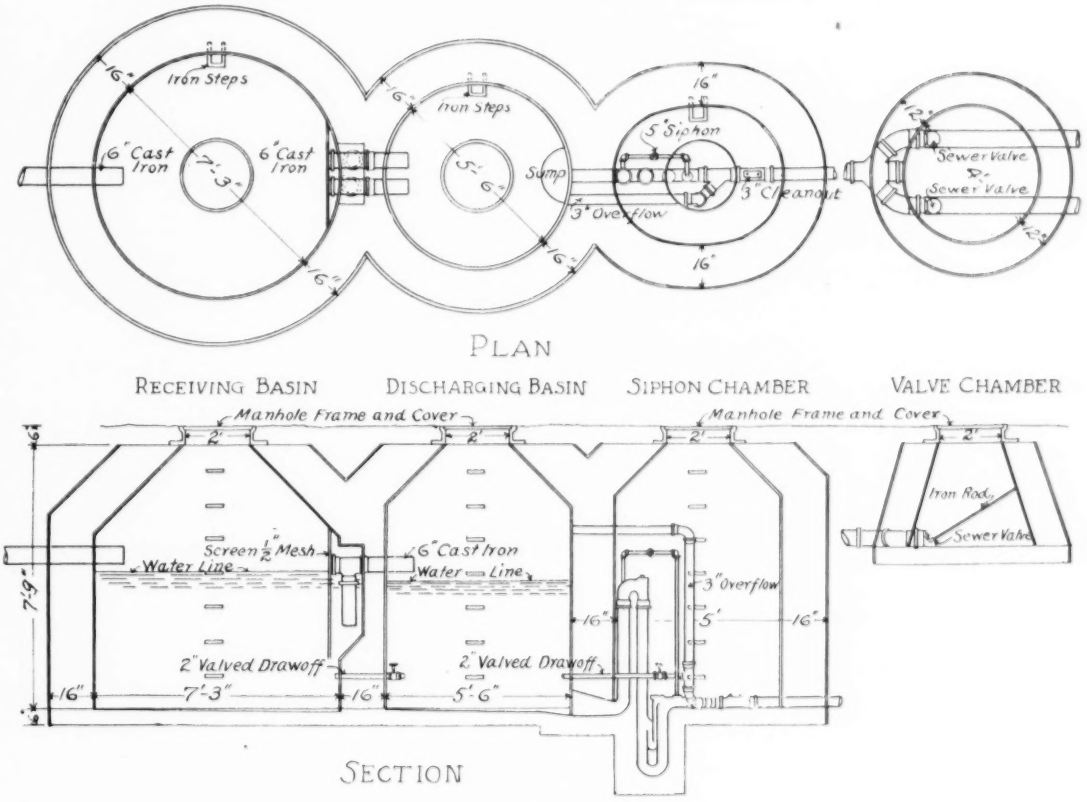


Fig. 4.

The tanks are constructed of concrete, with walls and bottom 8 inches thick, and with 6 inches thick reinforced concrete cover, provided with a manhole.

The detail drawings of a more elaborate septic tank system for a private residence are shown in Figs. 4, 5, 6 and 7. These drawings were prepared by William C. Tucker, Sanitary Engineer, New York City.

The location of the septic tank and disposal fields with reference to the house is shown in Fig. 3; the distance from the house to the receiving basin being 300 feet.

As will be noted, the fields are in duplicate and are

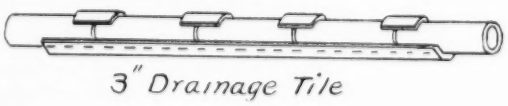


Fig. 5.

controlled by a valve chamber, so that they can be closed as required. Each field consists of fifteen lines of 3 inch drainage tile, 80 feet long, a total of 2,400 feet.

A plan and section of the receiving basin, discharging basin, siphon chamber and valve chamber are shown in Fig. 4.

The receiving basin is circular and has an inside diameter of 7 feet 3 inches, with walls 16 inches thick. The

when it reaches the valve chamber, which are controlled by valves, as shown.

All of these tanks are constructed of field stone and have a ½ inch coating of Portland cement, brush smooth inside and trowel smooth outside. They have 6-inch concrete bases.

The receiving basin has a capacity of 1,238 gallons and will take care of the needs of twenty persons based on a daily allowance of 60 gallons of water for each person. The discharging basin holds 623 gallons.

The tanks are 8 feet 9 inches deep, the top being flush

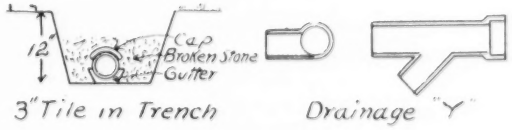


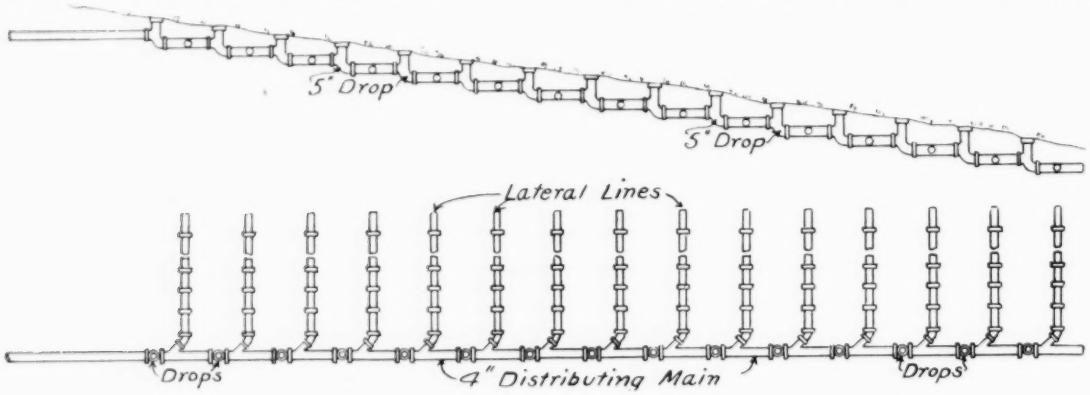
Fig. 6.

with the ground. A 2 foot manhole is provided for each basin and chamber, so that it can be easily entered for inspection.

The manner of regulating the sewer valves is clearly shown in detail, an iron rod being attached to the valve for this purpose, long enough to be easily reached through the manhole.

All of the pipe used in the basins and chambers was cast iron, tar coated.

The manner of laying the 3-inch drain tile on gutters is shown in Fig. 5. An end view of the 3 inch tile in trench,



DETAIL OF DISPOSAL FIELDS SHOWING DISTRIBUTING MAINS, "Y" BRANCHES, LATERAL LINES & DROPS.

Fig. 7.

showing the cap, broken stone around tile, and gutter is seen in Fig. 6.

A detail of the disposal fields, showing the distributing mains, "Y" branches, lateral lines and drops, is given in Fig. 7.

LEGAL DECISIONS.

Rules as to the Taking of a Note Constituting Payment.

A. owes B. a certain sum, and gives him his note therefor. What effect has this on the original debt? Does it pay the debt, or substitute the note irrevocably for it? Or, can B. still sue A. on the original debt? Circumstances may occur where he would very much like to do the latter. The Supreme Court of Tennessee, in Columbia, Etc., Co. vs. Marshall, 174 Southwestern Reporter, 1108, had a case where notes had been taken and materially altered by the complainants, so that they could not be collected, wherefore suit was brought on the original account. In affirming a dismissal of the case on the ground that the alteration of the notes being fraudulent prevented recovery on the original account, the court says it finds the weight of authority to be that the taking of a note of a debtor does not extinguish the original debt, nor operate as a payment, unless so intended or agreed between the parties, though it may extend the time of payment, and if for any reason without fraud the creditor loses his right to sue on the note, he is at liberty to sue on the original indebtedness. In other words, the court holds that the mere taking of the notes, and even their material alteration by the holders, was no bar to a suit on the original indebtedness, but that the fact that the alteration was fraudulent both destroyed the notes and extinguished the debt for which they were given. Likewise, with regard to the effect of taking a note, the United States District Court, Northern District of New York, says, In re Wegman, Etc., Co., 221 Federal Reporter, 128, that it is well settled in the state of New York and in the courts of the United States that, where a debt is owing by one person to another, the giving of a note by the debtor to the creditor and the receipt of such note by the creditor will not pay or extinguish the original claim or debt, in the absence of an agreement between the parties that the note is to be received as payment. This is the common-law rule, which prevails in England and has been adopted in nearly all of the states in this country. In Indiana, Maine, Massachusetts, and Vermont the rule is different. In those states it has been held that the note extinguishes the existing debt, unless it is agreed to the contrary. It is, of course, competent for the parties to the transaction to expressly agree that the note will be and is accepted in full payment and extinguishment of the original debt; but to establish this as a fact the evidence must be clear and satisfactory. There is no presumption that the note is accepted or received as payment.

Acceptance of Offers.

The law is that a party to whom an offer is made is at liberty to accept wholly, or to reject wholly, but one of these things he must do. A proposition to accept on terms varying from those offered is a rejection of the offer and a substitution in its place of the counter proposition. It puts an end to the negotiation so far as the original offer is concerned. The original offer thereby loses its vitality, and is no longer pending between the parties; hence the party who has submitted the counter proposition cannot, at his own option, revive and accept the original offer, which he has once virtually rejected. In order to give the rejected offer any new vitality, there must be a renewal of it, or renewed assent to it, by the party who made it. The attempted acceptance of a rejected offer is in effect nothing more than a proposal which must be assented to by the original offerer before any contract arises. The revival of the rejected offer is an essential part of the contract and it must be proven as a substantive fact. Furthermore, the Supreme Court of Minnesota holds, in Lewis vs. Johnson, 143 Northwestern Reporter, 1127, that, in a case where the statute of frauds requires the contract to be in writing, the agreement to deal on the basis of the rejected offer must be in writing.

Authority to Collect Does Not Include Indorsement of Checks.

The fact that a salesman has had conferred upon him authority to collect bills in cash, or to receive checks, does not carry with it implied authority to indorse checks. Kansas City (Mo.) Court of Appeals, in Kansas City Casualty Co. vs. Westport Avenue Bank, 177 Southwestern Reporter, 1092.

The Determination of Pipe Sizes for Hot Water Heating Systems*

By F. E. GIESECKE,
Professor of Architecture, University of Texas

(Concluded from Page 168 in the November 6th Issue.)

TO explain the practical application of the method of determining pipe sizes, let it be required to convey 250,000 B. t. u. through a pipe 150 feet long, when the difference in temperature of the water, in the flow and return pipes, is 20 degrees, and when the center of the radiator is 20 feet above the center of the heater.

Such a problem would arise when a number of radiators are located on one floor and connected to the heater by means of a single pipe.

The pressure-head producing flow is 1,415 feet, as shown by Table 1, and the problem reduces itself to that of finding the size of a pipe so that the friction-head will be .1415 feet in 150, when the water flows through the pipe with the velocity necessary to convey 250,000 B. t. u. per hour.

It will generally be necessary to make several trial calculations before the correct size is determined.

Let us begin by assuming a 3-inch pipe and an average temperature of water of 170 degrees; at that temperature water weighs 60.77 pounds per cubic foot; as the drop in temperature of the water is to be 20 degrees, each pound of water flowing through the pipe is therefore $\frac{250{,}000}{20 \times 60.77 \times 3{,}600}$ or, .0057 cu. ft. per second.

Since 19.5 feet of 3-inch pipe contain 1 cu. foot, the velocity of the water in the pipe must be .0057 x 19.5 or 1.11 feet per second.

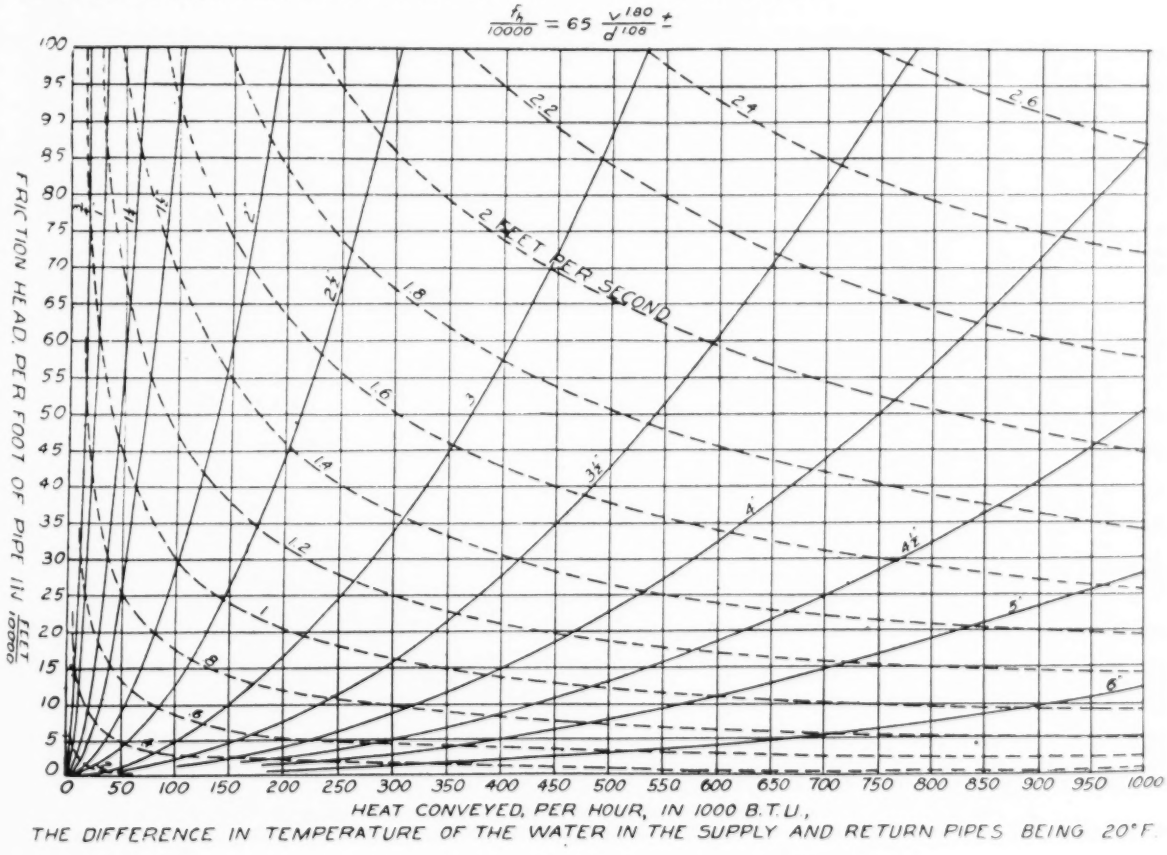

$\frac{f_h}{10000} = 65 \frac{v^{1.80}}{d^{1.08}} +$
FRICTION HEAD, PER FOOT OF PIPE IN FEET
HEAT CONVEYED, PER HOUR, IN 1000 B.T.U.,
THE DIFFERENCE IN TEMPERATURE OF THE WATER IN THE SUPPLY AND RETURN PIPES BEING 20°F.
2 FEET PER SECOND

Fig. 8.

Having the velocity of the water, the friction-head (h_f) may be found by means of the formula, $h_f = \frac{f \times l \times v^2}{d \times 2g}$; the value of the friction factor, f, to be used in this formula, may be taken from one of the standard text-books on hydraulics, or from the diagram of Fig. 6; for a 3-inch pipe and a velocity of 1.1 feet per second, it will be found to be about .031; by substituting in the equation and solving, we find the friction-head to be .3504 feet; since this is much more than the available pressure-head,

*Paper read at the Semi-Annual Meeting of the American Society of Heating and Ventilating Engineers, held in Atlantic City, N. J., September 16 and 17, 1915.

the pipe is too small, and a similar calculation must be made for a 3½-inch and possibly for a 4-inch pipe.

To make such calculations for all pipe-circuits would be very laborious and it is highly desirable to simplify the work by the use of tables or diagrams.

Professor Rietschel prepared and published very complete tables showing the heat conveyed by the various standard German pipes for a large number of friction-heads and velocities and for several differences in the temperatures of the water; the writer has found it more convenient and sufficiently accurate to use diagrams similar to that shown in Fig. 8, which was calculated by means of the friction factors shown in Fig. 6.

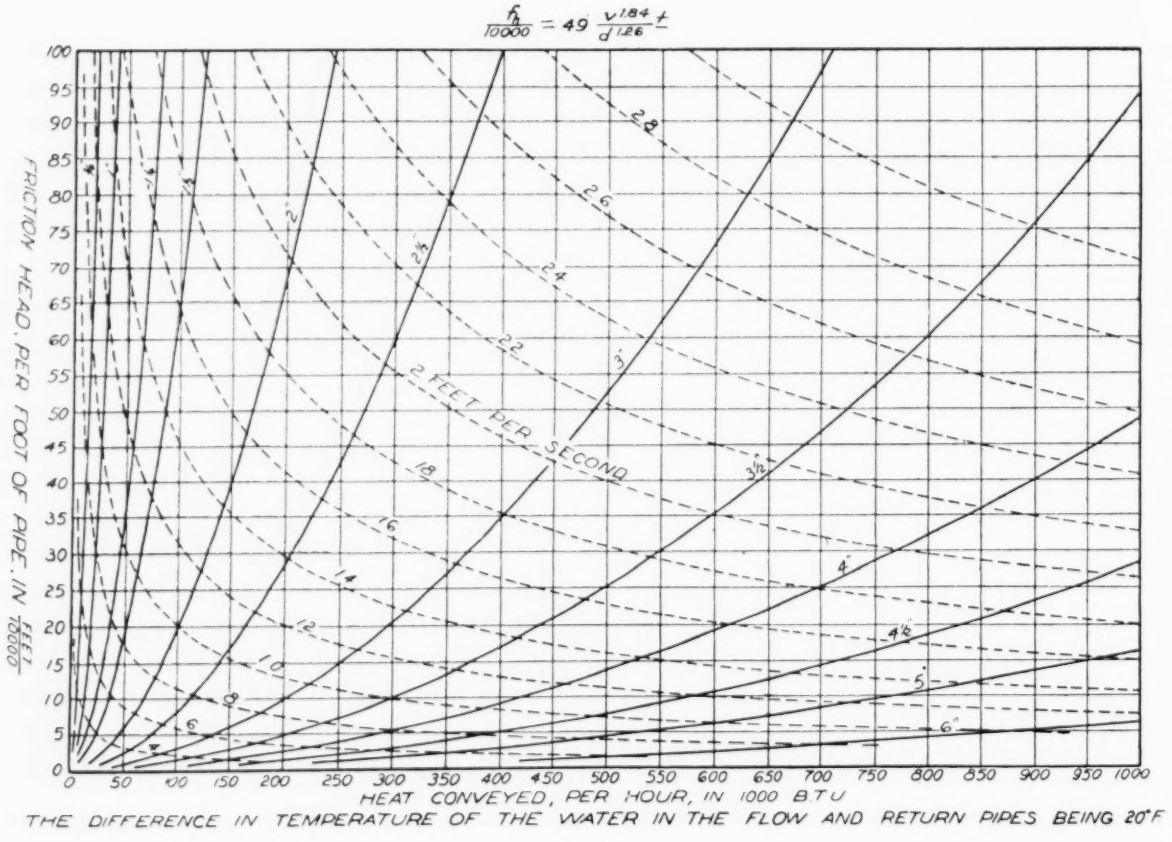

$\frac{h}{10000} = 49 \frac{v^{1.84}}{d^{1.26}} \frac{1}{e}$
FRICTION HEAD, PER FOOT OF PIPE, IN FEET / 10000
2 FEET PER SECOND
HEAT CONVEYED, PER HOUR, IN 1000 B.T.U.
THE DIFFERENCE IN TEMPERATURE OF THE WATER IN THE FLOW AND RETURN PIPES BEING 20°F

Fig. 9.

To explain the use of the diagram of Fig. 8, let it be used to solve the problem stated above: To convey 250,000 B. t. u. through a pipe 150 feet long by means of a pressure-head of .1415 feet when the difference in temperature of the water is 20 degrees.

A pressure-head of .1415 feet for a circuit 150 feet long is equivalent to .00094 feet per foot of pipe, or about 9½ feet in 10,000.

Find 250 in the lower margin of the diagram; follow the vertical line through that point and note that for a 3-inch pipe the friction is about 25 feet in 10,000, for a 3½-inch pipe about 11.4 and for a 4-inch pipe about 6.2; hence it follows that a 3-inch pipe is entirely too small, a 4-inch pipe is a little too large, and a 3½-inch pipe a little too small; a correct solution would require some 4-inch pipe and some 3½-inch; the respective lengths may be determined from the equation:

$11.4 \times x + 6.2 (150 - x) = 1415$, $x = 93$ feet of 3½-inch pipe,

and this means that there are required $150 - 93 = 57$ feet of 4-inch pipe.

The question arises: Is the diagram of Fig. 8 reliable? When it was constructed, the formulas employed were based on the friction factors published in works on hydraulics, which represented the best available data at that time. Since then the German experiments have shown that as the temperature of the water increases the friction decreases, we may, therefore, conclude that the pipe sizes determined according to the diagram are unnecessarily large and that the diagram should be modified to conform to the results of the late German experiments.

It is difficult to prepare accurate diagrams for American pipe from the results of the German experiments, because American pipe differs somewhat from the standard German pipe; in German work two distinct types of pipe are used, one known as Muffenrohre and the other as Siederohre.

Muffenrohre are similar to the American pipe with screwed couplings, and are used in the smaller sizes only; Siederohre are patented pipes with flanged couplings, and are used in the larger sizes only. From the results of experiments, Professor Brabbee developed the following formulas for the two types of pipes, which represent the experimental results accurately within 4 per cent.

$$\text{For Muffenrohre } \frac{h}{e} = 2570 \frac{v^{1.84}}{d^{1.26}}$$

$$\text{For Siederohre } \frac{h}{e} = 4920 \frac{v^{1.80}}{d^{1.37}}$$

In preparing tables for Professor Rietschel's book the Muffenrohre formula was used for pipes smaller than 2 inches and the Siederohre formula for pipes larger than 2 inches.

Translated into English units and expressed in feet per ten thousand, the two formulas become:

$$\frac{h_f}{10000} = 49\,\frac{v^{1.84}}{d^{1.26}}$$

$$\frac{h_f}{10000} = 69\,\frac{v^{1.80}}{d^{1.37}}$$

The curves of the diagram of Fig. 8 are expressed quite accurately by the formula:

$$\frac{h_f}{10000} = 69\,\frac{v^{1.80}}{d^{1.37}}$$

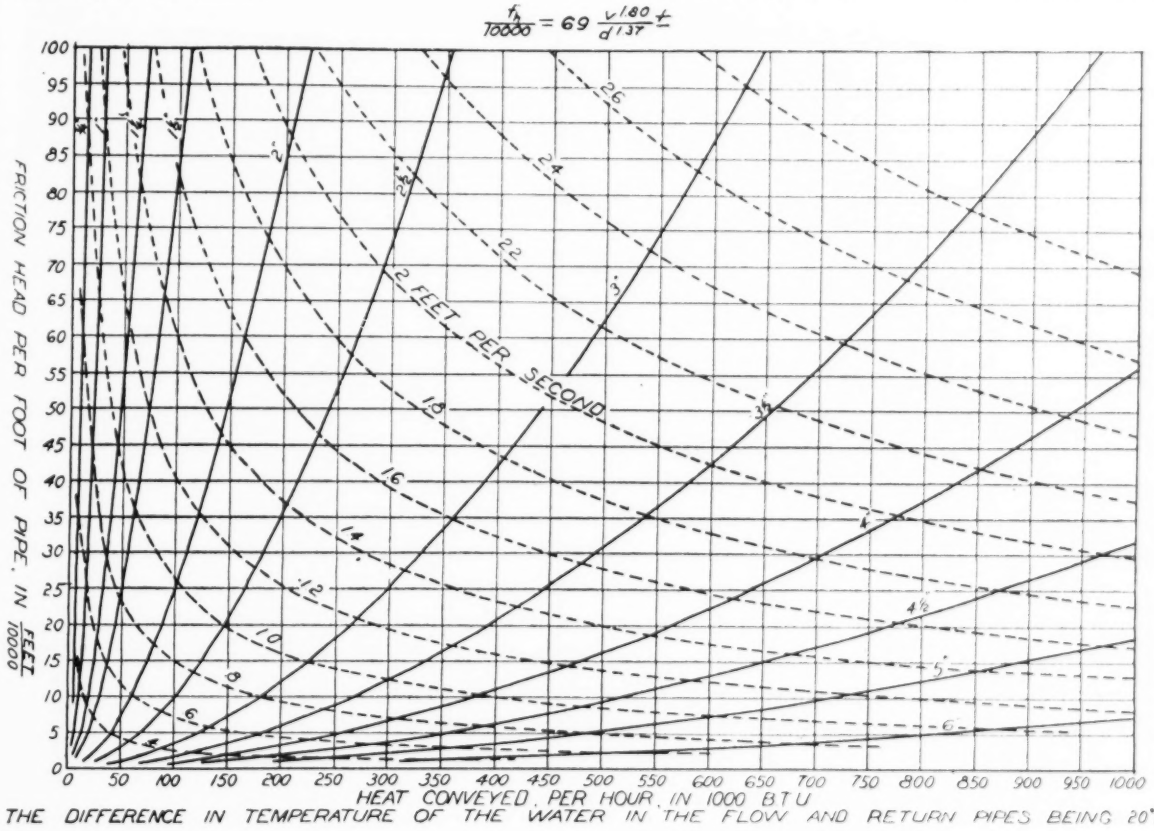

FRICTION HEAD PER FOOT OF PIPE, IN FEET/10000
HEAT CONVEYED PER HOUR, IN 1000 B.T.U.
THE DIFFERENCE IN TEMPERATURE OF THE WATER IN THE FLOW AND RETURN PIPES BEING 20°F
2 FEET PER SECOND

Fig. 10.

$$\frac{h_f}{10000} = 65\,\frac{v^{1.80}}{d^{1.08}}$$

To compare the two German formulas with each other and with the one just quoted the diagrams of Fig. 9 and Fig. 10 were designed to represent the two German formulas; they may be used as explained for Fig. 8.

An inspection of the three diagrams will show that, for the problem stated above, the friction head would be for 3-inch, 3½-inch and 4-inch pipe respectively.

According to Fig. 9:—15.0, 7.2, and 4.0 feet/10,000.

According to Fig. 10:—18.4, 8.9, and 4.9 feet/10,000.

According to Fig. 8:—25.0, 11.4, and 6.2 feet/10,000.

The corresponding pipe sizes would be respectively:

According to Fig. 9:—43 feet of 3-inch and 107 feet of 3½-inch.

According to Fig. 10:—8 feet of 3-inch and 142 feet of 3½-inch.

According to Fig. 8:—93 feet of 3½-inch and 57 feet of 4-inch.

This calculation shows that a considerable economy may be effected by designing heating systems according to coefficients based on the German experiments, but it also shows the desirability of conducting a series of accurate tests with standard American pipe.

If the pipe circuit is to be designed for a system, in which the difference in the temperature of the water is to be other than 20 degrees, the same diagram may be used by varying the heat to be conveyed in the inverse ratio, in which the difference in temperature varies from 20 degrees. For example, if the difference in temperatures, in the problem above, is to be 30 degrees instead of 20 degrees, the heat conveyed would be 30/20 as large as it would be for a difference in temperature of 20 degrees, for the same velocity of flow, and consequently for the same friction head; hence we find 20/30 of 250, or 167, in the lower margin of the diagram and determine the friction-heads for the various pipe sizes and select the correct sizes, bearing in mind that the available pressure-head will be increased from .1415 feet to .2106 feet, according to Table 1. Thus, according to the diagram of Fig. 10, 48 feet of 2½-inch and 102 feet of 3-inch pipe would be required.

In the problem solved above, the friction due to the pipe alone was considered.

In nearly all heating systems the friction due to the pipe, valves, radiators, etc., forms an important part of the total friction and must never be omitted.

The correct design of a heating system requires that the friction due to the pipe and the friction due to the

fittings, valves, radiators, etc., for any one circuit, shall, together, be equal to the pressure-head for that circuit.

Professor Rietschel represents the friction or resistance due to fittings, etc., by the expression, $s \times \frac{v^2}{2g}$, and assigns various values to s, which are based largely on ex-

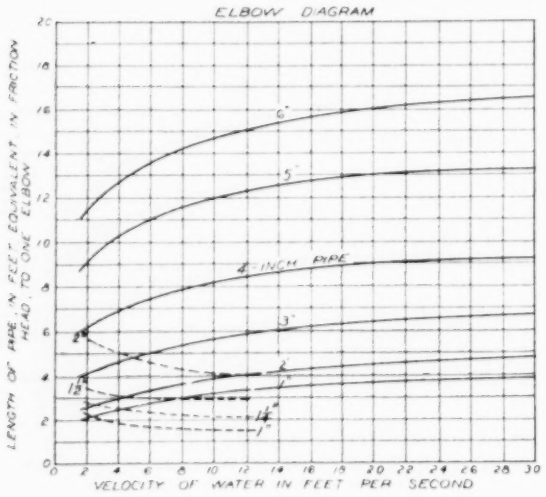


Fig. 11.

perimental determinations. For example, if v and g are expressed in metric units, the values of s are as follows: For 90 degree elbows from 1.5 to .5 and for tees from 2 to 1, depending on the size of the pipe; for radiators from 2½ to 3, and for various valves from 2 to 30. Tables are prepared, showing the friction-heads for various values of s and v, from which the friction-head due to any number of fittings may be determined and added to the friction-head due to the pipe.

By calculating the friction-head due to one elbow and that due to one foot of pipe, for the same velocity, the relation between the two can be determined, and the elbow expressed in terms of feet of pipe. This was done and the diagram of Fig. 11 prepared; the full lines show the relation between the same, according to Professor Rietschel's tables.

To explain the use of the diagram, let it be required to find the friction due to four 3-inch elbows, when the velocity of the water is 1 foot per second. The diagram shows that for a 3-inch pipe and a velocity of 1 foot per second, one elbow is equivalent to 5.6 feet of 3-inch pipe; four elbows are equivalent to 22.4 feet; according to the diagram of Fig. 10, the friction-head for a 3-inch pipe and a velocity of 1 foot per second, is 15 feet in 10,000, or .336 feet for 22.4 feet; this is also the friction-head due to the four elbows.

The writer conducted a series of experiments during the spring and summer of 1912 to determine the friction in elbows and other fittings and published the principal results in "Domestic Engineering," November 2, 1912; in these tests eight elbows were tested at one time, so that in the final results all errors and inaccuracies are divided by eight.

Fig. 12 shows the results of these tests on 1-inch galvanized iron pipe, sleeves, gate valves, open return bends, 45 degree elbows, 90 degree elbows, globe valves, tees and radiators with radiator valves and union elbows.

From this and other tests the writer concluded that the following relations may be assumed between the ordinary 90-degree elbow and the other fittings, valves, etc.:

1 45-degree elbow equivalent to half of a 90-degree elbow.

1 open return bend equivalent to one 90-degree elbow.

1 gate valve equivalent to half of a 90-degree elbow.

1 globe valve equivalent to twelve 90-degree elbows.

1 tee equivalent to two 90-degree elbows.

1 sleeve (negligible) equivalent to one-tenth of a 90-degree elbow.

1 radiator, with valve and union elbow, equivalent to seven 90-degree elbows.

Having found the number of 90-degree elbows equivalent to the various fittings used in any circuit, their equivalent length of pipe may be determined from Fig. 11, this added to the actual length of pipe in the circuit, and for this sum the friction-head determined as explained above.

The curves of the diagram of Fig. 11 do not agree closely with the result of the writer's tests of elbows; to show the differences between the two, the dotted lines of Fig. 11 were drawn; they represent the results obtained by the writer for the relations between elbow and pipe, for

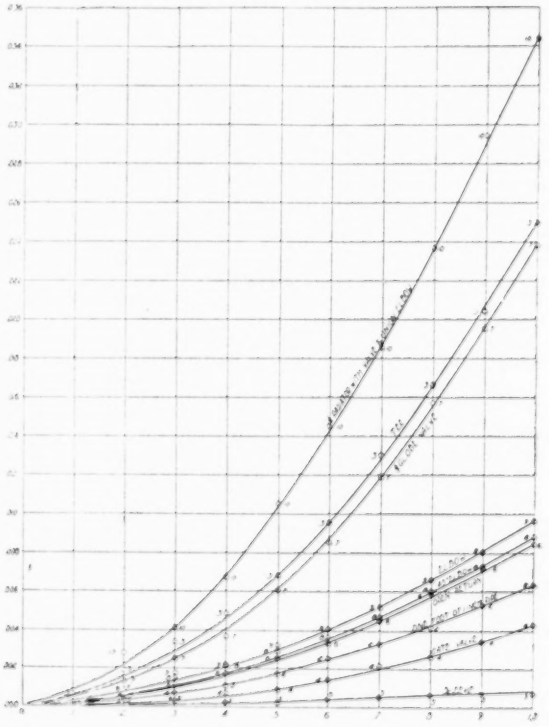


Fig. 12.

velocities ranging from .2 to 1.2 feet per second, and for pipes ranging from 1-inch to 2-inch.

The differences between the dotted and the full lines of Fig. 11 suggest the desirability of additional tests to determine the friction due to elbows, etc.

Fiction.

Editor (to contributor)—"Why don't you make your story true to life?"

Contributor—"What's the matter with it?"

Editor—"What's the matter with it? Why, here you say that 'there was the sound of a shot, and immediately the street swarmed with policemen.'"—Judge.

New Plumbing Ordinance for Manchester, Conn.

(Concluded from Page 180 in the November 6th Issue.)

Section 17. The diameter of vent connections for traps shall be not less than the waste pipes they serve, except water closet vents, which shall be not less than two inches, and which shall be taken from near the top of the bend between the water closet and the entrance of the bath or other waste, and as near to the water closet as practicable.

Section 18. Vents on traps shall be not less than one and one-half inches in diameter and taken from near the crown or from the top of the waste pipe near the trap, but in no case from inside of the crown of the trap.

Section 19. Vent connections shall be made so as to conform with the flow of water.

Where T's or T Y's are used they shall be installed so as to conform to the flow of the air. Continuous vents may be used only on wash bowls unless special permission is given in writing by the Board of Health.

Section 20. Bowing of vent pipes shall not be allowed.

Section 21. Rubber vent couplings will not be allowed. Heavy brass vent couplings for lead and iron pipe may be used.

Steam Exhaust.

Section 22. No steam exhaust, blow-off or drip pipe from a steam boiler shall connect with the sewer or with any drain or soil or waste pipe.

Such pipes must discharge into a tank or condenser from which a suitable outlet to the drain may be provided, and a vent pipe in no case less than two inches in diameter be provided to relieve the pressure in the same.

No overflow from an expansion tank for hot water shall connect with any drainage system, unless a suitable trapped fitting be provided for such connections.

Section 23. The waste pipes from all fixtures must be separately and effectively trapped. Traps must be placed as near the fixtures as practicable, and in no case shall the trap be more than two feet from the fixture. Each bath tub must be fitted with a four-inch pot trap having a one and three-fourths inch seal. When a wash tray of not more than two trays and kitchen sink are on the same waste pipe, they may be trapped together by an S trap not less than two inches in diameter having an outlet of the same size, both fixtures to enter this above the water seal.

When a wash tray of not more than two trays and kitchen sink are on the same waste pipe they may be trapped together by an S trap not less than two inches in diameter, having an outlet of the same size, both fixtures to enter this above the water seal.

A suitable grease trap with suitable water jacket for cooling the grease must be placed under the sink of every hotel, restaurant, eating house or other cooking establishment.

Refrigerator Waste.

Section 24. Waste pipes from refrigerators, iceboxes or other places in which food is stored shall not be connected directly with any soil or waste pipe, drain or sewer. They must be discharged into an open water supplied sink properly trapped or into a pan or other receptacle that may be emptied when full, or on the ground.

Water Closets.

Section 25. Water closets must never be placed in a cellar of a tenement, lodging or boarding house, or in the cellars or basements of other buildings without special permission of the plumbing inspector. If a water closet is to be installed in a pantry, such installation will not be approved until another pantry of suitable size and having proper means of ventilation is provided. Each compartment containing a water closet must be at least 2 feet 6 inches wide and of sufficient size to give at least two feet in the clear in front of the closet, and if containing a bath tub at least eighteen inches clear space in front of the tub for its entire length. It must be well lighted and ventilated to the outer air by a window of at least three square feet in area, so arranged as to give a free opening of this size when open, or be separately ventilated by means of an approved shaft or air duct. In the latter case a suitable fixed window of at least twelve square feet in area shall be provided in the enclosing partition, suitably arranged to admit the natural light from the adjoining room. When such room or compartment is located in or closely adjacent to a room used as a dwelling, bake shop, market, provision store, or in any case in which escaping odors would cause a nuisance, all partitions must be made tight with lath and plaster or by such other method as may be approved by the plumbing inspector.

Local Ventilation.

Closets and urinals when installed in the general toilets of school houses, hotels, office buildings, railroad stations, stores, public buildings and other places in which the number of fixtures grouped in the same room or other conditions make it, in the opinion of the plumbing inspector desirable, shall be local vented. The closets used shall be of the "raised rear" or "Boston type" of local vent, having a cross section area of not less than six and one-half square inches. Side vents will not be accepted.

Local vents shall exhaust into the outer air by a suitable system of ducts or flues so proportioned that the cross section area of any part of the system must be as large as the total area of the vents on the fixtures it serves. Proper circulation must be secured by connecting the main duct with a chimney or flue which is constantly heated, or an exhaust fan may be installed. This should have a capacity of at least fifty cubic feet of air per minute for each fixture connected with the system, and must be kept in operation during the time that the fixtures are in use.

Floor Flanges.

All water closets must be connected by a heavy brass floor flange, weighing not less than one pound, six ounces, properly soldered to the lead bend, and no closet shall be set until the floor flange has been inspected. The connections of the water closet and the floor flange must be made by an approved gasket which must be leaded. Putty connections cannot be used.

Section 26. Pan-closets, offset closets, iron hopper, latrine and plunger closets are prohibited. They will not be allowed under any circumstances, and wherever removed shall not be replaced. Washout or offset washout closets shall not be placed in a new building, nor shall they take the place of another closet without a special permit from the Board of Health.

No enclosing woodwork shall be installed in connection with any fixture or with water closets, and a post hinge seat or similar device, satisfactory to the Board of Health, permitting the cleaning of all exposed surfaces, must be used. The use of wooden laundry tubs and wooden sinks

are prohibited without special permit from the Board of Health.

Section 27. All water closets and urinals must be flushed from tanks, automatic tanks or flush valves known as "flushometers" and not from the service pipe direct. The capacity of each tank must be such as will enable its contents to flush effectually without a refill, and the water piping in the building must be of sufficient size to supply the occupants at all times.

Section 28. The entire system of plumbing, including lead connections and drains within the building, must be tested by filling the whole system with water, and having it remain filled for at least six hours.

Section 29. When the plumbing is found to stand the test for the time specified, notice shall be given to the Board of Health, whose inspector shall, within a reasonable time, proceed to inspect same and approve or reject it.

Section 30. Any such system put in and covered before it has been tested and approved by the inspector must be uncovered for examination at the direction of said official.

Section 31. A smoke or peppermint test shall be applied to the completed work in the presence of the plumbing inspector when deemed necessary by him. Upon the completion of the work to the satisfaction of the Board of Health a certificate of approval will be issued.

Section 32. Whenever any changes are made in the plumbing or drainage of houses already erected all new work must be done in accordance with the preceding rules.

Section 33. Deviations and variations from these rules will be allowed when desired, if, in the opinion of the board, they will not be, or are not liable to become, a source of danger to the public health.

Constructive Publicity for the Plumbing Trade.

Under the caption of the "Plumber of Today Must Be a Man of Exceptional Ability," the "Minneapolis News" on October 30th published the following article on the importance of the plumbing trade and on how plumbing has become an absolute necessity in modern life. This article is such excellent publicity for the plumbing craft that we take pleasure in reproducing it herewith:

The modern city would not be possible were it not for the expert, scientific plumbing of the present day.

This may seem like a sweeping statement, but it is one that may well be considered. True, there were great ancient cities. How great they were is not revealed by actual statistics, but even though Babylon were as great as New York City—a matter that may well be doubted—nevertheless, it was not so efficient a city. Cities were great in the far-off past, but so were the pestilences that all too frequently beset them. Conditions that beset Nineveh would not be tolerated in the present day. Ancient cities fell and vanished because they lacked sanitation; modern cities persist because of it. Modern plumbing makes modern cities possible. It may well be doubted if there is anything else in a modern city so basic.

Sanitation is a consideration that has taken a wonderfully strong hold on the modern mind. Why this is so is, in quite a measure, inexplicable, unless the logic of the scientist, even to the lay mind, is inescapable. Within the memory of men who do not count themselves old, the contentions with regard to sanitation were regarded as mere theories and scarcely at all as practical considerations. In those days plumbing was a labor-saving device, for those who could afford it, for conveying water.

But how different in the present day. The conveniences of plumbing are not alone for the rich. They are prime necessities for nearly all who dwell in cities no matter what their financial rating. Plumbing is so necessary that it is made a matter of legal supervision. As already pointed out, plumbing is basically essential to the welfare of a modern city—it cannot be thought of as a luxury or a mere convenience.

The modern status of plumbing is of recent origin. As already pointed out, present-day exactions with respect to sanitation have come about with comparative suddenness. Plumbing had to keep pace with these exactions. Plumbing, therefore, had to be suddenly put on a modern business basis. The obtaining conditions, in which the plumbing shop was a sort of hole in the wall, down the alley, and the plumber, himself, the butt of jokes for the almanac compiler and negro minstrel, had to be changed and the plumbing craft transformed into highly organized and capitalized modern business, having full dependence on the highest engineering and mechanical skill, and on full scientific knowledge. The plumbing business of today is no joke.

In view of the modern status of the plumbing business it is not at all surprising that we find in most cities, as we have here in Minneapolis, master plumbers' associations that are in turn associated with the state and national organizations. Like other great business undertakings in the present day, plumbing must have its standards. It can no longer be the hit and miss, unstandardized affair it was in the day when a begrimed, untrained jack-knife mechanic and a boy was a full-fledged plumbing establishment.

Exactions required of master plumbers in the present high state of the art are very severe. How severe is seldom little realized unless one pauses to consider. A carpenter or a mason, for instance, may slight their work in a hundred different particulars and yet, so far as the users of the house or building they construct may know, all will be as it should. But let a contracting plumber make an elaborate and careful installation in a given building, and let him be ever so careful and painstaking in all his work, if he but leaves the occasion of even a very small leak in some obscure part of the work, the whole undertaking is judged by it. How infinitely painstaking must be the effort on every part of the work; how absolutely beyond question must be every part of the material. Plumbing work, like a chain, is not judged by the great preponderance of its unquestioned worth, but by its weakest link. Plumbers are all too frequently saddled with the aspersion that they are unduly slow; but when one pauses to reflect that the complete job will be judged by its absolute soundness, down to even the seemingly most inconsequential joint or connection, then one realizes that the plumber's undertaking must consist in reality rather than in seeming.

Other than extreme care at every step, the plumber is also beset with other difficult limitations. It seems fair to put the situation this way: The plumber has always to fit his work to the contrivings and inventions and designs of others and is never left to his own choice in the matter. To illustrate: The carpenter builds a house and then the plumber accommodates his plumbing

to it as best he may. How different might be the situation were the plumber allowed to first set up his ideal of a well plumbed establishment and then the builder be asked to fit his structure to it.

It will perhaps occur to some that the master plumbers of the present day are not given due recognition for their work and design in the decorative sense. Plumbing has been heretofore thought of as a down-cellar affair, and of far ramifying pipes between joists, and yet how indebted to the modern plumbing art we are for much of the beauty of our homes. Modern bathrooms in many instances are veritable works of art.

The matter of heating our homes, even in the near past, was considered a mere approximation of the desired end, fraught with unsightliness, uncleanliness and disorder. But how different today. Heat is not alone equitably and agreeably applied, but the very paraphernalia by which it is distributed about our homes is sightly and even decorative.

And, too, what refinement there is today in plumbing appliances. This point may, perhaps, best be made clear by reference to the writings of Mrs. Emily Post, a widely-known American novelist. Recently she undertook a trip across the United States in behalf of Collier's Weekly, describing her impressions by the way. Writing of her experience she tells of some of the advantages of hotels. "Already," she writes, "I could make up a treatise on plumbing. I have found an 'anti-scald' device. I read about it in the service booklet later. The curious looking handles and levers occupying most of a white-tiled wall at the head of the bath tub, so fascinated me that I had to try and see how they worked. I pulled knobs and pushed buttons that were seemingly for ornaments only, until suddenly a harmless-looking handle let loose a roaring spray of water that came from every part of the amateur Niagara at once. My bath was over before I had meant it to begin, and I got undressed afterward instead of before. I like the bath rooms with running ice water faucets."

So it goes; the recital might be considerably extended. But any one who pauses to reflect, as has been a number of times suggested in this article, will realize how substantially indebted to the plumbing art for health, for comfort and beauty, withal, in our homes, we are.

DRAFT PLUMBING CODE FOR TEXAS.

A committee of master and journeyman plumbers of Texas, by invitation of V. M. Ehlers, state sanitary engineer, met at Austin, Tex., on October 30th, and compiled a state code which it is hoped will, sooner or later, become law by a legislative act. For the present, however, it will be offered to localities not having a plumbing ordinance.

It is expected that within the next two years there will be much activity in the construction of sewerage systems, in compliance with the state law regarding the pollution of rivers, streams and water courses, in which plumbing will play a considerable part. It is said that there is at present 116 cities and towns in the state which have sewerage systems of one type or another, and also various types of plumbing codes. There are also 337 towns with a population of over 1,000 which have no sewerage systems of any kind. Therefore, it is pointed out by leading plumbers of the Lone Star state, that there is urgent need of reformative legislation. The members of the committee are: Sam Weeks, Dallas; R. G. Thomas, San Antonio, and J. O. Montrief, Fort Worth, master plumbers; A. D. Chandler, Fort Worth; J. Boll, Dallas, and Jno. Heffernan, Houston, journeymen.

Questions and Answers

WATER BECOMES TOO HOT IN RANGE BOILER.

Editor "Domestic Engineering":—I am sending you a sketch of range boiler connections, the only trouble from which is that the water gets so hot that it has to be drawn off to cool it down, and as water is metered, the owner finds this too expensive.

The connections between the two boilers are different from any I have seen, and yet they make too much hot water. You will note that the upper boiler is supplied with water through the flow pipe from the lower boiler, which I think is the chief trouble.

Would it remedy the trouble to make it a circulation system? Please give me a sketch showing how the trouble can be overcome.

Philadelphia, Pa. J. B. S.

Fig. 1 shows the job that correspondent describes. Certainly he is correct in criticising the connections. Simply because the boilers overheat, would of course, be no sign that the connections are perfect, in fact, the job heats in this way in spite of the wrong connections.

In Fig. 2 we show connections that are preferable to

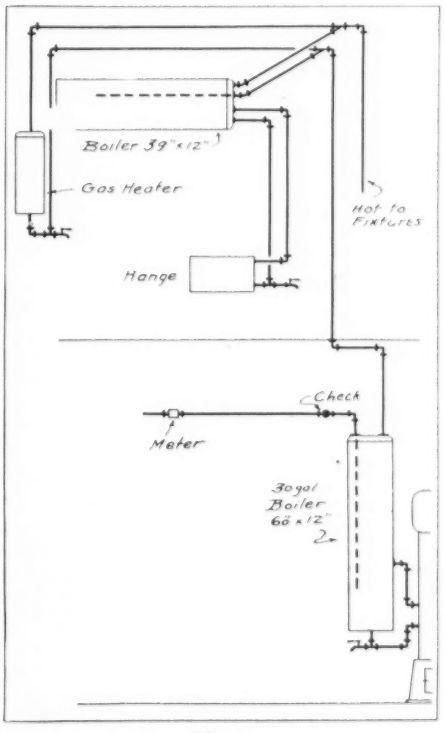


Fig. 1.

those of Fig. 1. We have given the upper boiler a separate supply, and made several other changes in the connections at the upper boiler which he will readily understand are an improvement over the old connections. We have also shown circulation connected to the return

for the lower boiler, and believe this will help to overcome the overheating, although we do not believe this will remedy the trouble completely. We would suggest that, if the owner had use for heating a small radiator, or possibly a good-sized one, he could no doubt help the situation by installing same.

It will be noted from the dimensions of the upper boiler, as compared with those of the lower boiler, that the former is very small. No doubt the range and the water front in the heater offer too great heating surface, and, if

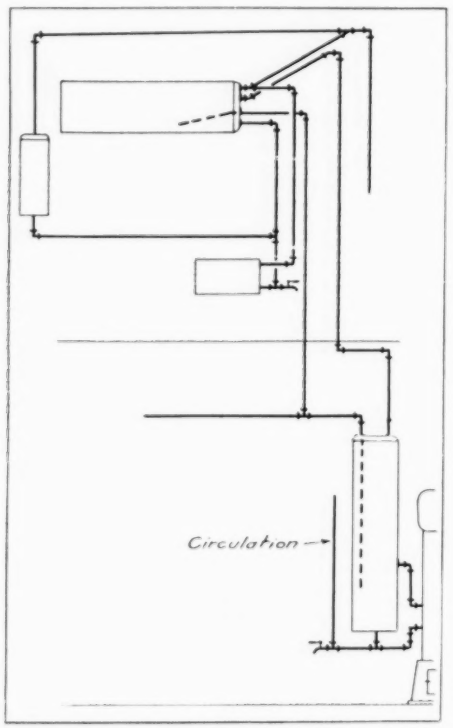


Fig. 2.

desirable, it would be entirely practicable to solve the difficulty by replacing the upper boiler with a larger one.

With a check valve on the supply, with no safety valve, we do not see why the overheating has not resulted in a serious explosion as the check closes all means of expansion. We see no need of a check valve, and in Fig. 2 have cut it out.

AN UNUSUAL AUXILIARY HEATING SYSTEM.

Editor "Domestic Engineering":—The accompanying sketch, Fig. 1, shows the layout of heating system which one of my customers is planning to have installed. His house heating boiler is loaded to full capacity under the present arrangement, and he wants to add two radiators, one in the northwest corner of each of the front corner rooms. He has a No. 2 large tank heater and a 40-gallon boiler to heat water for domestic use, and he now wants this heater to supply heat to the two additional radiators, assisted by a copper coil in the large boiler.

I am afraid we would have to have the tank heater and the radiators galvanized and use only galvanized pipe and fittings.

Kindly give me your opinion about this job, and also suggestions concerning its improvement.

Philadelphia, Pa. D. M. T.

The sketch submitted by correspondent is shown herewith, in Fig. 1, and with regard to the circulation of the work there is no question but what it will circulate as laid out. The risers supplying the radiator on second floor should be taken from the upright pipes or "spuds" supplying the first floor radiator, that is to say, a tee should be placed on both the flow and return to the first

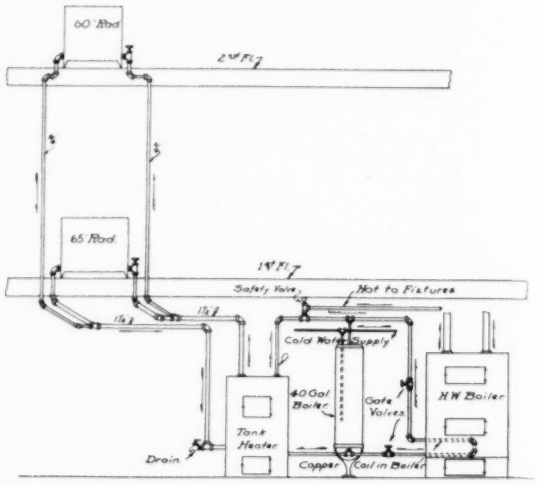


Fig. 1.

floor radiator and the flow and return riser to the second floor connected from the side of these tees.

With regard to the galvanizing of pipes, etc., as mentioned in the communication, would say that while it is usual to use galvanized pipe for domestic water supply work it is not usual to use a galvanized storage tank when a tank heater is used in connection with it. Unless there are other conditions than mentioned, we do not believe that the supplying of radiators, as shown, will affect the condition of the water supply.

After the installation is made more or less oil and core sand from the radiators will work down into the tank heater. There will also be more or less core sand and impurities in the tank heater itself. The water, of course, must be drawn off several times, until the system is thoroughly cleansed, after which we believe there will be no further trouble.

It has occurred to us that this installation will hardly be serviceable for use in warm weather or at times of the year when the use of the radiators is not required. We do not know the size of the tank heater, as the size (No. 2) given does not indicate anything, but a tank heater is usually sufficient for use in connection with a large storage tank anywhere from one hundred or one hundred and twenty gallons to five or six hundred gallons. In this case the hot water supplied to the radiators in connection with that supplied to the 40-gallon boiler shown will probably prevent any undue or excess pressure accumulating on the apparatus. In the summer time, however, when the radiators are not used the heater will prove excessively large for the work, unless its use is discontinued and provisions are made to cross-connect the 40-gallon boiler with a water back in a kitchen range or with a gas heater. Not being conversant with the full details of the work we simply wish to call attention to this condition.

Should the above suggestions not prove sufficient to make this installation satisfactory, kindly let us have fuller details concerning the system in question.

HEATING SYSTEM FOR BUILDING AND BAKERY.

Editor "Domestic Engineering":—The accompanying sketch, Fig. 1, shows a tubular steam boiler and heating layout which is being used in a bakery for heating the building and for operating ovens and bread mixer. We intend to install a pressure and reducing regulator valve

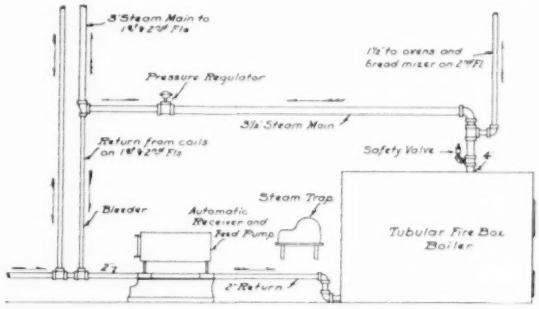

3" Steam Main to 1st & 2nd Fls
1½" to ovens and bread mixer on 2nd Fl.
Pressure Regulator
3½ Steam Main
Return from coils on 1st & 2nd Fls
Safety Valve
Steam Trap
Bleeder
Automatic Receiver and Feed Pump
Tubular Fire Box Boiler
2" Return

Fig. 1.

on the heating main and carry a pressure of five pounds in same. On the oven and bread mixer supply we will carry between thirty and fifty pounds. It is our intention to install a Marsh automatic feed pump and receiving tank in rear of boiler, and attach to 2-inch return to force back the condensation from the heating system into the boiler, and to use an Anderson steam trap to receive the condensation from the ovens and mixer and have it discharged into the receiver of the Marsh pump. It is our intention to save every drop of water or condensation possible. We would appreciate any method you might suggest for us to pursue, in making the installation, as this is our first experience.

Peoria, Ill. C. M. B.

The installation referred to in the above letter is illustrated by Fig. 1, which shows as closely as possible the sketch submitted by correspondent.

The method of installing this work as outlined in the

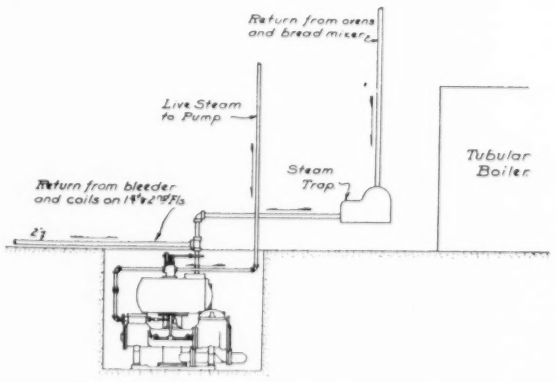

Return from ovens and bread mixer
Live Steam to Pump
Steam Trap
Tubular Boiler
Return from bleeder and coils on 1st & 2nd Fls

Fig. 2. Method of Connecting Trap and Pump.

above communication is very good, indeed, and if the various parts of the system are properly placed and connected there should be no trouble whatever in saving all of the condensation.

The automatic receiver and feed pump should be set sufficiently low so that the condensation from the steam trap and from the coils of the heating system can flow by gravity into the receiver of the trap. The receivers of these pumps are so constructed that the water in filling operates a float which in turn operates a valve on the live steam supply to the pump, putting the pump in motion until the water in the receiver has been lowered to a point where the float operates to close the valve and shut off the steam supply.

We submit a sketch, Fig. 2, showing an automatic pump connected in this manner. The sketch does not show boiler connections or coil connections, but they are to be made in the usual manner. Also the sketch does not show the feed pipe connection between the pump and the boiler, but we think that it is sufficiently plain to enable correspondent to obtain the correct idea of the method of connection. It may be possible that the return from the coils may be raised somewhat higher and that the pump can be set on a line closer to the floor line of the boiler room, the position of the trap being governed by the conditions of the work.

HOW TO FIGURE RADIATION FOR STEAM AND HOT WATER HEATING.

Editor "Domestic Engineering":—Kindly allow me to ask you what the correct ratio is in figuring hot water and steam heating? In other words, how many cubic feet of room space will one foot of steam or hot water radiation heat to 70 deg. Fahr. in a modern home?

Fort Wayne, Ind. Y. C.

The ratio of cubic feet of space warmed by one square foot of radiation depends upon a number of varying conditions, principally the amount of cooling surface in the room to be heated.

In the earlier days of steam and hot water heating many rule-of-thumb rules for estimating radiation were used. Among these rules was a rule apportioning a certain number of cubic feet of space to be warmed by a square foot of steam or hot water radiation, the number of cubic feet allowed depending upon the character of the building and the use to which it was put. The results obtained by the use of this rule were little more than a guess as to the actual amount of radiation required, and we advise our correspondent to refrain from the use of such a rule.

It has been quite definitely determined that each square foot of glass (windows) or outside doors has a certain cooling value; likewise each square foot of outside or exposed wall surface, and from these facts certain simple rules have been evolved for quick estimating, the results from which are reasonably accurate.

The Mills rule calls for one sq. ft. of radiation for each two sq. ft. of glass or outside doors, one sq. ft. for each twenty sq. ft. of exposed or outside wall surface and one sq. ft. for each two hundred cubic feet of contents.

The sum of these results will give the total amount of direct steam radiation required. For direct hot water radiation 60 per cent should be added to the amount required for steam. Allowance should be made for poor building construction or for unusual exposure.

The above rule is based upon 0 degrees (Zero) outside temperature and 70 degrees inside temperature, therefore a factor to be considered is the geographical location of the building to be heated. For example, in a certain section of the Southern states requiring artificial heat the average winter temperature may be 20 degrees above Zero or in the extreme north or northwest 20 degrees below Zero, while the rule as given is applicable to the middle states where the average cold weather is Zero. To compensate for this variation in temperature add 1½ per cent for each degree below Zero or deduct 1½ per cent for each degree above Zero.

For example, suppose that by rule the amount of radia-

tion required was 600 sq. ft. If the building is located in the Northwest, where the temperature reaches 20 degrees below Zero, we add 1½ per cent for each degree below Zero. 20 x 1½ per cent = 30 per cent, therefore, 600 + 30 per cent = 780, the amount of radiation that should be installed to maintain an inside temperature of 70 degrees when the outside temperature is 20 degrees below Zero.

Suppose the coldest temperature is 20 degrees above Zero, 20 x 1½ per cent = 30 per cent. 600 — 30 per cent = 420, which represents the amount of radiation required for this climate.

Indirect radiation requires 50 per cent additional for steam or 75 per cent additional for hot water, and direct-indirect 25 per cent additional for steam or 35 per cent for hot water.

Rooms located on the north, west or northwest sides of a building require more radiation than those on the south, east or southeast, as the former are usually more exposed to the chilly winter winds.

Where absolute accuracy is desired other allowances should be made, which lack of space will not permit us to discuss at length.

Muriatic Acid

From the Persain—By PHILIP F. GRACE

THERE are thousands and tens of thousands who sincerely believe there is nothing new under the sun, that what exists today, existed tens of thousands of years ago. The belief being a harmless one, why should they be disturbed in their penchant, which no doubt brings unalloyed joy to them? Yes, many, very many people are more than positive that what is existing and doing things now, existed and did the very same things ages upon ages agone.

A certain professor, having a fund of humor, dropped into the office of a well-known Brooklyn master plumber, to pay a bill of some three hundred and fifty dollars for work done "in a strictly mechanical manner, to the entire satisfaction of the owner," as the specifications would put it. The master plumber was born of "poor but Irish parents" and so could smile in the face of fire, flood, famine or shipwreck.

Mike, as he was affectionately known by most everybody in town, received the professor very cordially, and they began a little chat. In the course of the conversation the professor remarked that he was one of the very many who implicitly believed that things happening now would happen again in the very same way thousands of years hence, as they have happened thousands of years agone. In fact, we were only re-enacting today what had taken place in the sweet, sweet, long, long ago.

"I am now, and have been of the very same opinion, ever since I have been able to reason," said Mike.

This was a bit of a surprise to the professor, knowing, as he did, that those of us who have Irish blood in our carcasses are mostly contrary, seldom if ever agreeing with the other fellow, but most alway "agin th' govirnmint onyhow." So after a bit more of pleasant chat the professor said: "Mike, I owe you a bill for plumbing, so on account of the war and further rumors of war, I may find myself short on funds. What I want to know is, could you credit me for a few thousand years or so, or perhaps for a few years longer?"

Mike answered quickly: "Certainly, Professor, I'll do it with pleasure, and be glad to wait longer than that, but you must remember that six thousand eighty-five years and nine months ago I did a lot of work for you, and you asked credit for it, and I gave it. Now, then, pay me that plumbing bill, and I'll only be too glad to trust you for this one."

Laughingly did the professor draw forth the check he had written out for Mike, slapped him on the back and remarked, too, that that particular master plumber was a blue ribbon peach of the very first order of merit.

The Persians preserve all of their legends, and no family is so poor that it cannot have at least ten large books filled with the doings of thousands of years ago. Wealthy families have large libraries, and copies even of the trade journals of long past epochs can be seen, provided, of course, the owners care to "unkiver" them, as they say in the Southland.

Here is a story told the writer by El Nedin, a wealthy young Persian, who is in this country taking a post graduate course in chemistry. It relates to a wealthy bachelor master plumber, without kith or kin, who retired from business with a fortune so great that some of the $25,000,000 munition orders, as placed here by the Allies, would only be a flea bite beside it. He had earned it honestly,

"Gimme a Dollar's Worth of Muriatic Acid for Solderin' Purposes!"

and no one knew it better than he. Sed-el Nar, that was the master plumber's name, was a bit sensitive about the fun poked at his craftsmen by the daily, weekly and some of the trade papers even.

One trade paper, the "Druggists' Monitor," had had more than its share of fun with the plumbers about the honesty of their charges. Sed-el Nar, with the time and inclination, ditto the dough, at his disposal, started in to find out if the druggists were all honest. With him on

retiring went a faithful navvy or digger of trenches, and they both went to "batch" it on the very fat of the land, in Sed-el Nar's great big palace, environed by a great, large park. Sed, as we will now call him, bought five hundred one ounce bottles, and sent Yamos, the navvy, to every druggist in town and adjacent cities for muriatic acid. Sed knew well that the stuff was worth less than thirty cents a quart, but that didn't worry him a wee bit.

He would give Yamos a coin equivalent to one silver dollar with every ounce bottle sent out. Yamos would go to the druggist and say: "Gimme a dollar's worth of muriatic acid for solderin' purposes," and in every case he would get the bottle back three-quarters full. No change.

Druggists never fill a bottle, no matter how small, except in making up prescriptions. So Sed and Yamos kept the thing up until every druggist in Bushire, Hamadan, and Ispahan had been visited. Their bottles had all been labeled "Muriatic Acid, Poison," with the names of the sellers thereon. Sed placed them where they would do the most good—for reference. After a year of hard battering they at last found one lone druggist who handed back 95 cents change, saying five cents was enough, adding, "If you 'uns want a whole dollar's worth o' muriatic acid for soldering purposes, bring along a gallon jug."

Then came Sed's turn, for he filled the daily and weekly papers with "full and succinct" accounts of what he and Yamos had done. The good old King read all about the thing or things, and at once issued an edict that all druggists should be banished from his realms for three hundred and fifty years, and that no pill roller nor his next of kin to the 'steenth generation could hold any position of profit or trust during the next three centuries.

Sed, at the urgent request of the King, reluctantly accepted the specially created office of "Commissioner of Plumbing and Sanitation," Yamos being appointed a real factotum—not an also ran. The one lone honest druggist was given a monopoly of the drug trade throughout the empire. He not only gave four ounces of muriatic acid for a nickel, but always threw in a fruit syrup or ice cream soda to the festive helpers or embryo boss plumbers, who were sent to get it, and made a little profit besides. So we will leave dear old Persia for the present, with the hope that El Nedin will translate some more stories of plumbers and plumbing for the edification of the craft, at present sojourning on this mundane sphere.

League City, Tex.—I. L. Schwedtman has opened an up-to-date plumbing establishment in the Hotel Yoakum building in this city.

Wilkinsburg, Pa.—Struble Bros. Co. has been incorporated with a capital of $10,000 to conduct a heating business. The incorporators are: J. J. Struble, C. L. Struble and Howard F. Struble.

Great Falls, Mont.—O. M. Embrey and A. M. Embrey have formed a partnership under the name of the Great Falls Plumbing & Heating Co., and have opened an up-to-date establishment at 516 First Avenue South.

New York, N. Y.—Milton Schnaier Co., of 347 Columbus Avenue, has been incorporated with a capital of $25,000, to conduct Mr. Schnaier's plumbing business. The incorporators are: Milton Schnaier, G. Abrams and E. C. Herrington.

Richmond, Ind.—The Craighead Plumbing & Electric Co., of this city, has changed its name to the Stanley Plumbing & Electric Co.

Great Falls, Mont.—Harris Bros. have moved their plumbing business from 627 Central Avenue to 16 Fourth Street, where they have secured larger quarters.

New Haven, Conn.—The J. H. Buckley Co. has moved its plumbing and heating establishment from 179 Church Street to 14-18 Whitney Avenue. This company has been located at the Church Street address for the past 35 years. Its officers are Edward M. Cotter, president, and T. C. Fowler, secretary and treasurer.

Monticello, Wis.—S. J. Luchsinger has secured a contract for the installation of a vapor heating system in Ezra Blumer's farm home near this town.

Biloxi, Miss.—D. L. Rush & Son, of East Howard Avenue, have been awarded the contract for installing plumbing, heating and lighting systems in the $10,000 bungalow now being erected on West Beach Street, in this city, for A. Lopez.

Wheeling, W. Va.—A. P. Wood, of 2332 Market Street, has been awarded the contract for the plumbing work in connection with the new swimming pool now being constructed at the Columbia Club in this city. The pool will cost about $4,500, and will be equipped with all modern devices.

Buffalo, N. Y.—The Frontier Plumbing & Heating Co., of 353 Ellicott Street, has secured the contract for plumbing and heating in the Wygant residence on Highland Avenue, and it is at the present time installing new heating boilers in St. Theresa's Roman Catholic Church in this city.

GOVERNMENT CONTRACTS TO BE AWARDED.

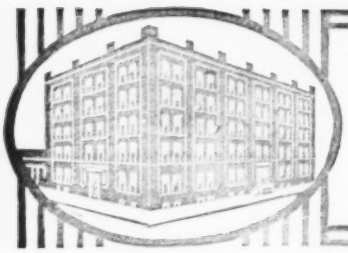
Acting Supervising Architect James A. Wetmore, Treasury Department, Washington, D. C., will receive sealed proposals for government work as follows:

Until 3 p. m., November 30, 1915, for changes in the plumbing in the United States post office at Pottsville, Pa.

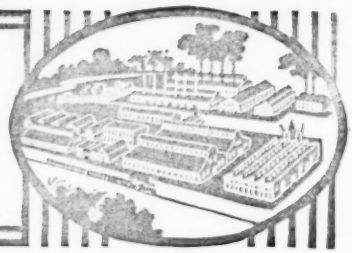
Until 3 p. m., December 18, 1915, for the construction complete, including plumbing, heating and lighting, of the United States post office at Middletown, O. The building is to be two stories with basement and has a ground area of approximately 6,291 square feet.

Until 3 p. m., December 20, 1915, for the construction complete, including plumbing, heating and lighting, of the United States post office at Humboldt, Tenn.

Drawings and specifications for the above work may be obtained from the custodians of the different sites or from the office of the Supervising Architect in Washington, D. C.



Among the Wholesalers and Manufacturers



NATIONAL COMMITTEE OF C. S. A. TO MEET IN NEW YORK.

A meeting of the National Committee of the Confederated Supply Associations will be held at the Hotel Astor, New York City, on Thursday, November 18th. J. J. Ryan, of J. J. Ryan & Co., Chicago, is president of the committee.

COMPANIES RECENTLY INCORPORATED.

The McCormick Plumbing Supply Co., of Detroit, Mich., has been incorporated with a capital stock of $15,000.

The Eastern Plumbing Supply Co., of Chicago, has been incorporated with a capital of $2,000, to deal in plumbing specialties. The incorporators are: Robert L. Hutner, Joseph Boozel and A. Schultz.

The Fair Ventilator Co., of Detroit, Mich., has been incorporated with a capital of $50,000, to manufacture ventilating systems. The incorporators are Charles J. Stodgell, A. R. Mason and George A. Fair.

The Steuben Geyser Water Heater Co., of Steubenville, O., has been incorporated with a capital of $25,000, to manufacture water heaters. The incorporators are: Joseph C. Feldman, Frank D. Sinclair, Spence Wallace and J. Oscar Naylor.

The Simmons Forced Draft Co., of Goldsboro, N. C., has been incorporated with a capital of $125,000, to manufacture heating and ventilating specialties. The incorporators are Nathan O'Berry, George S. Dewey and L. H. Simmons.

The Hull Pump & Tank Co., of Owensboro, Ky., has filed articles of incorporation listing its capital stock at $100,000. The officers of the company are: J. W. McCulloch, president; N. D. Hull, vice-president and general manager; Lawson Reno, treasurer; and J. J. Trefz, secretary.

ILLINOIS CHAPTER HEARS ADDRESS ON POWER PLANT DEVELOPMENT.

The velocity of steam through the turbines at the large plants of the Commonwealth Edison Co., Chicago, is equal to that of a rifle ball or at the rate of 2,000 feet a second, according to W. L. Abbott, chief operating engineer of the concern, who delivered an interesting address on "Power Plant Development" at the regular monthly meeting and dinner of the Illinois Chapter of the American Society of Heating and Ventilating Engineers, held Monday evening, November 8th, at the Morrison hotel, Chicago. About forty members and guests of the chapter were in attendance, when the roll call was read by Secretary W. L. Bronaugh.

"The steam remains in the turbines about a one-hundredth part of a second," continued Mr. Abbott, "and in that time it must expand 700 volumes. The total time which elapses while the steam enters the turbine and returns to the boiler, is three seconds, the greater part of this time being taken up during the passage through the condenser. The local plants of the Commonwealth Edison Co. will deliver 400,000 horsepower during the coming winter on their peak loads. The maximum thermal efficiency is 16½ per cent of the energy of the coal. We generate a kilowatt hour with 11 pounds of steam, and we run our boilers on energy which is 170 per cent of the standard rating."

In maintaining super-heat the speaker explained in chalk-talk demonstrations that the company must sacrifice an enormous amount of steam energy in order to maintain certain levels of super-heat. He showed how a large quantity of steam is lost in order to secure a minimum amount of super-heat.

An average of one hundred tons of coal is consumed per day, while practically 2,000 carloads of coal are in transit at all times. The speaker pointed out, that on busy days coal is burned at the rate of 250 tons an hour. He explained how the fuel is handled by electric cranes and conveyed in chutes and hoppers to the bunkers, and is finally deposited in the boiler rooms, ready for use by the stokers.

"We find it necessary to burn coal without smoke," said Mr. Abbott, "and we have accomplished it in our modern plants. In the smaller plants, however, we are still paying our quota to the maintenance of the smoke department in the City Hall."

The speaker pointed out that the company's power plants were divided into three distinct parts, namely, the boiler room, the turbine room and the switch house.

Following the address members asked questions which were answered by Mr. Abbott. A rising vote of thanks, which was proposed by President E. L. Hogan, was accorded the speaker of the evening before the meeting adjourned.

BUILDING OPERATIONS FOR OCTOBER.

Building operations for October make decidedly the best showing for the year to date. Official reports received by the "American Contractor," New York, from 73 cities, show building permits issued for the month to amount to $62,938,777, as compared with $44,227,293 for October, last year, an increase of 42 per cent. There was a gain of 32 per cent in September and one of 14 per cent in August, the comparative reports for months earlier in the year all showing losses as compared with 1914. The increase last month was so large that it seems to mark a full return to the normal amount of construction work. The improvement is general throughout the country, 52 of the 73 cities showing gains.

The influence of the splendid showing of the past three months has practically offset the reverses of the first seven months of the year, the total returns for ten months reaching $566,823,188, as compared with $574,316,049 for the corresponding months of 1914, a decrease of only one per

cent. Following are the details for October, 1915, as compared with October, 1914:

	October, 1915	October, 1914	Per Cent Gain	Per Cent Loss
Akron	$ 1,215,045	$ 304,815	299	
Albany	705,365	239,225	195	
Atlanta	257,251	215,988	17	
Baltimore	629,138	299,098	110	
Birmingham	136,747	138,373		1
Boston	2,098,209	1,047,380	100	
Buffalo	856,000	604,000	42	
Cedar Rapids	116,000	245,000		53
Chattanooga	90,440	77,387	17	
Chicago	12,479,250	6,774,200	84	
Cincinnati	865,575	402,235	115	
Cleveland	3,097,501	2,265,685	37	
Columbus	390,685	649,220		40
Dallas	243,887	204,150	19	
Dayton	302,225	36,203	762	
Denver	192,450	177,985	8	
Des Moines	221,701	145,084	53	
Detroit	2,611,400	1,491,225	75	
Duluth	217,240	236,625		8
East Orange	66,770	122,507		45
Evansville	76,383	99,850		23
Ft. Wayne	259,800	161,400	61	
Grand Rapids	169,576	152,080	11	
Harrisburg	158,400	53,475	196	
Hartford	493,718	360,135	37	
Indianapolis	532,777	338,089	57	
Kansas City	1,512,015	533,790	183	
Lincoln	103,010	53,860	91	
Little Rock	31,969	120,747		73
Los Angeles	787,389	1,573,222		50
Louisville	304,040	336,730		10
Manchester	290,779	97,499	198	
Memphis	165,005	105,580	56	
Milwaukee	747,169	668,413	12	
Minneapolis	2,338,555	1,064,570	120	
Nashville	181,738	82,569	120	
Newark	723,279	707,086	2	
New Haven	280,120	231,315	21	
New Orleans	65,590	286,378		77
New York City	11,036,328	9,242,640	19	
Manhattan	3,070,466	4,023,152		24
Bronx	2,304,664	1,292,080	78	
Brooklyn	3,670,692	2,719,320	35	
Borough of Queens	1,776,826	1,076,194	65	
Borough of Richmond	213,680	131,894	62	
Oklahoma	424,925	19,975	2,027	
Omaha	360,225	157,675	128	
Paterson	90,496	50,836	78	
Peoria	109,700	165,660		34
Philadelphia	2,980,665	2,466,910	21	
Pittsburgh	1,274,960	1,085,348	17	
Portland	351,030	508,705		31
Richmond	181,203	122,620	48	
Rochester	784,969	401,192	96	
St. Joseph	61,818	25,106	146	
St. Louis	1,214,618	1,115,874	1	
St. Paul	739,308	1,000,100		26
Salt Lake City	167,655	107,605	56	
San Antonio	1,110,380	83,000	33	
San Francisco	1,236,249	1,479,518		16
Schenectady	62,061	98,235		37
Scranton	121,740	300,835		59
Seattle	550,765	610,660		10
Shreveport	75,124	75,985		1
Sioux City	147,950	52,950	180	
South Bend	38,235	25,153	52	
Spokane	162,023	60,050	170	
Springfield, Ill.	162,600	63,525	156	
Syracuse	392,240	293,080	34	
Tacoma	70,205	46,563	51	
Toledo	815,552	404,937	101	
Topeka	55,759	50,855	10	
Troy	65,059	64,178	1	
Utica, N. Y.	283,880	279,925	1	
Washington	1,344,999	407,411	230	
Wichita	41,440	8,100	412	
Wilkes-Barre	40,283	58,173		31
Worcester	370,142	590,807		37
Total	$62,938,777	$44,227,293	42	

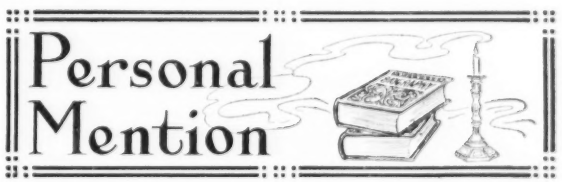
EXPORTS OF PIPES AND FITTINGS, PLUMBING AND HEATING GOODS.

While there has been a decrease in the value of pipes and fittings exported from the United States, official records of exportations for the fiscal month of August, just issued, shows that the value of the exports of these lines for August, 1914, was far above that of August, 1915.

Strange as it may seem, Japan is the heaviest buyer of American-made pipes and fittings in a list of all nations. The little Island Republic of Cuba holds second place, while Canada takes third position in value of these purchases. During August last, Japan purchased 1,377,482 pounds of pipes and fittings from American manufacturers, valued at $30,288, while the purchases by Cuba totaled 1,117,008 pounds, valued at $19,747. Purchases of these two lines by Canada totaled 881,166 pounds, and were valued at $22,728. During the fiscal month of August last, 5,838,061 pounds of pipes and fittings were exported from American ports, upon which there was a valuation of $139,961.

Official records of exports of sanitary appliances present some rather interesting data. As an illustration, enameled lavatories and sinks were exported in August, 1914, to Porto Rico to the value of $215, and the exports of the same lines to the same port for August, 1915, advanced to $2,077. This would show that greater thought is being given sanitation in Porto Rico. The same can be said about the exports to the Philippine Islands. Exports of these two items in August, 1914, were valued at but $605, while the record for August last, is $1,510, and for the first eight months of this year, $25,174.

During the first eight months of this year radiators and cast-iron house heating boilers to the value of $105,657, have been exported to all countries.



R. Frank Fife, president of the Canton Supply Co., of Canton, O., has just returned from a two months' recreation trip to Denver and Colorado Springs.

E. L. Strauss, president of the Central Brass Mfg. Co., of Cleveland, O., visited the Chicago trade this week. He spoke very optimistically about trade conditions at the present time.

A three weeks' deer hunt will be the particular form of outdoor sport which will engage the attentions of W. E. Clow, Sr., J. E. Clow, Kent S. Clow and R. B. Clow, all of James B. Clow & Sons, Chicago. These gentlemen left last Tuesday night on a special train, carrying a party of local huntsmen, bound for the woods of Northern Wisconsin.

Touring over boulevards and through city parks has its charms, but we are advised upon excellent authority that city joy-riding fades into utter insignificance when compared with the delights of rural auto riding, and especially when it rises to the importance of an overland trip. Only recently we were advised that a jolly party of folks in the trade motored overland from Buffalo, N. Y., to Pittsburgh, Pa., and then returned again. They made the trip in record time. The route chosen was via Jamestown, N. Y., Warren, Clarion and Butler, Pa. The pic-

ture shows a stop in a mountain pass near Clarion, at which point they reached an elevation of 1,547 feet, the same affording a magnificent view of the country for miles in every direction, and also showing the mountains in all

George Salzman and His Party in a Mountain Pass Near Clarion, Pa.

their autumn grandeur. Those in the party were: Mr. and Mrs. Geo. Salzman, Jr., Miss Mildred Salzman, of the D. L. Hamill Co., Buffalo, N. Y., and C. F. Meyer, of the Iron City Sanitary Mfg. Co., Pittsburgh, Pa.

From the motorist's point of view, Chicago has along her lake front one of the finest speedways in America. That is the unanimous verdict of the auto fraternity. The local police department, however, contemplates this famous Riviera of the Central states from an entirely different angle of vision, and members of the department have worked hard to disabuse the riding public of the "speed point of view." It is therefore not to be marveled that a gentleman from Wheeling should make this fatal error, peculiarly confined to motorists, particularly in view of the fact that level roads in West Virginia are limited entirely to the race course at the county fair. Just what

his record was in West Virginia, no one appears to know, because no one could follow him. We are creditably informed, however, that his speed record in Chicago was promptly ascertained by a swift little man on a motor cycle who wore brass buttons, and who was curious enough to ask the motorist's name, etc., etc. The motorist in question smiled and saluted, and then presented his business card, well known to men in the trade in the middle west. It read: "J. D. Holloway, Wheeling Steel & Iron Co., Chicago, Ill."

THE McLAIN GAS BOILERS FOR STEAM AND HOT WATER HEATING.

A glance at the accompanying illustrations will give the reader a pretty clear idea of the construction of the McLain gas boilers for steam and hot water heating, manufactured by the J. H. McLain Co., of Canton, O. Fig. 1 shows a sectional gas boiler for steam heating, and Fig. 2

Fig. 1. The McLain Gas Steam Sectional Boiler.

its base with burners. The sections of this boiler, the manufacturers state, are constructed of the best quality grey iron castings, free from imperfections, due to careful proportioning of the percentage of phosphorus in the iron, and the waterways are as narrow as is consistent with a free circulation and free separation of the steam from the water. Ample steam space is allowed at the top of each section, which is the top of the boiler, there being no hood over the sections. With the exception of a small space in the front of the sections, the hot gases are entirely

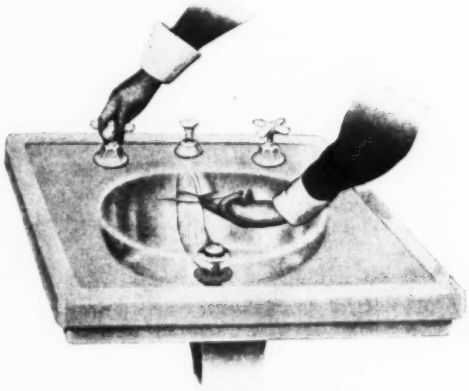
Fig. 2. The Base of the McLain Gas Steam Boiler.

surrounded by water ways until they reach the breeches, thereby transferring a maximum part of the heat units to the water and reducing to a minimum the radiation losses. The sections are assembled by the well-known heavy cast iron, push nipple construction. The base is also said to be substantially constructed of grey iron castings and bolted together, giving it a rigid construction. The doors in the front panel have mica covered openings and are just large enough to permit the removal of burners and the observation of the same while in operation. Interested parties can

obtain complete information from the above-named company upon request, mentioning "Domestic Engineering."

THE MADDOCK SELF-CLEANSING LAVATORY.

In an effort to improve lavatory construction the Thomas Maddock's Sons Co., of Trenton, N. J., has recently placed on the market a lavatory, with a self-cleansing overflow, under the trade name of the "Maddock Self-Cleansing White Vitreous China Lavatory." As shown in the phantom view herewith, the cleansing proc-

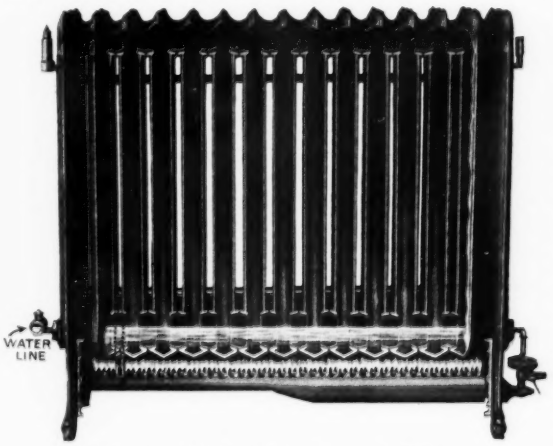


The Maddock Self-Cleansing Lavatory.

ess of the overflow of this new lavatory is very simple: Just press a finger firmly over the opening of the waterway, and then turn on the supply valves. This forces the water through a small hole which is bored between the supply channel and the top of the overflow. The force of the swirling water passing through the small hole flushes the walls of the overflow and leaves them thoroughly clean and sanitary.

THE FRANKLIN GAS-FIRED STEAM RADIATOR.

A glance at the accompanying illustration will give the reader a pretty clear idea of the appearance of the Franklin gas-fired steam radiator, manufactured by the Franklin

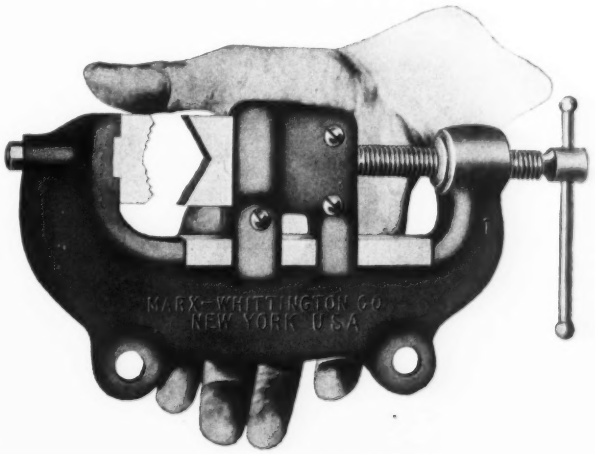


The Franklin Gas-Fired Steam Radiator.

Co., of Canton, O. This radiator uses gas for fuel, and is described as being a complete heating system, with fire box, boiler, water gauge, automatic control and radiation surface. It is further stated that its use eliminates all loss of heat, it burns only sufficient gas to maintain the desired temperature, and it is an independent heating plant for each room. Its operation is described as follows: "Within 15 minutes after being lighted the small amount of water in the lower part of the radiator has reached the boiling point. The steam then begins to rise in the columns of the radiator, and within 20 minutes there will be five pounds steam pressure, which equals 228 degrees of heat within the radiator. When this pressure is reached the flow of gas is automatically cut down, due to the steam pressure on the thermostatic control valve, which works diversely on a needle plunger in the gas chamber. The amount of gas then allowed to flow into the burner is only sufficient to maintain the pressure of five pounds." The radiator proper is made of cast iron, and the valves and attachments are made of high grade bronze and brass. These radiators are made in over twenty sizes, and they are said to be suitable for use in all kinds of buildings, from cottages to apartments, and from stores to office buildings. Interested parties can obtain complete information from the above named company upon request, mentioning "Domestic Engineering."

THE WHITTINGTON PIPE VISE.

One of the latest additions to the plumbing tools of the Marx-Whittington Co., of Easton, Pa., is the Whittington pipe vise. This vise is compact and convenient for carrying in tool bag. The No. 1 vise, having a capacity for all sizes from ¼-inch to 1½-inch pipe, weighs less than four pounds, a convenient size for the short job. This vise, the makers state, does not require any pressure to hold the



The Whittington Pipe Vise.

pipe, one of the jaws being smooth and loose; any attempt of the pipe to rotate causes this jaw to form a strut that extends forward and crowds the pipe against the tooth jaw—the holding pressure is in a correct ratio to the force applied in tooling. The jaws cannot crush the pipe, and they will not lock. The general "C" clamp form gives a permanent opening for the insertion and removal of pipe. Grip and release is automatic and instantaneous. All parts are interchangeable. The tooth jaw can be replaced in a moment. The vise is built as a tool, not as a fixture. It can be used in any position, and as a wrench, if desired. Interested parties can obtain full particulars about this tool from the above-named company upon request, mentioning "Domestic Engineering."

Steel and Iron.

The railroads are purchasing equipment in large proportions especially locomotives and cars. Inquiries are out for 30,000 cars, while the market for rail tonnage was somewhat quiet in very large orders for rails placed since the Pennsylvania order reported last week. Large orders for rails are impending and may be consummated at any moment. Locomotive builders have inquiries for 116 locomotives. Structural work was of fair volume, the total amounting to 18,000 tons of steel. Buying of steel for projectiles is still limited by inability of mills to furnish early delivery. Sales last week amounted to 104,000 tons of steel. Prices were advanced by the Carnegie Steel Co. for plates, shapes and bars $2 per ton. The pig iron trade witnessed another week of unexampled activity. In the East foundry iron was actively sought, while at Pittsburgh large orders for basic iron and other steel making grades were placed, the orders amounting to 250,000 tons. At Buffalo the Lackawanna Steel Co. closed for 70,000 tons butt metal from the Susquehanna furnaces for delivery over the first half. Prices continue to advance and still higher prices are to be expected. Buyers of extra lots of foundry grades are finding difficulty to close for prompt delivery, while local factors reported furnaces declining much first quarter business. Quotations are as follows:

No. 2X Northern Foundry, New York	$16.75 to $17.25
No. 2X Northern Foundry, Buffalo	15.50 to 16.00
No. 2 Southern Foundry, Birmingham	11.75 to 12.50
No. 2 Southern Foundry, Cincinnati	14.65 to 15.40
No. 2 Ohio Coke, Cincinnati	14.00 to 14.50
No. 2 Northern Foundry, Chicago	14.00 to 14.50

Copper.

During the past week electrolytic displayed growing strength, buying orders from domestic consumers developing beyond expectations. That consumers are holding small supplies was evident by their willingness to pay the advanced prices. Sales during the week amounted to 80,000,000 pounds, most of which was for domestic consumption. Electrolytic copper closed at 18¼ spot cash and 18½ thirty days delivered. The strike in Arizona continues to affect productions and the closing of the Panama Canal continues to be a factor to be reckoned with as South American copper, especially from the West Coast, will be delayed in deliveries.

Tin.

A shortage in tin is feared owing to conditions prevailing at the Straits. The tin market advanced rapidly last week, due to a better conception of the situation that exists there. Spot tin is in steady demand, although consumers are well covered for the present, buying of tin already here being resorted to by consumers as a medium for accumulating stock against the possible shortage. A shortage of coal prevails at the Straits and prices have advanced sharply, while steamers to transport fuel are not available in sufficient quantities to enable the smelters to secure an ample supply. Then again consumption in the United States has increased, while at the Straits the outlook is for a decrease in production. Coal could be secured from Japan but it is of poor steam quality and its use would increase the cost of production. Spot tin closed at 36 cents.

Spelter.

The upward trend in spelter continued but there is a feeling that a reaction in prices will shortly occur, as buyers cannot overcome the belief that increased production must result in lower prices. Spot spelter closed at 15.27½ cents.

Lead.

The leading interest again advanced the price of lead last week $2 a ton, making it 5 cents a pound. The demand for lead by both domestic and foreign buyers continued, resulting in a decrease of stocks and the outlook is good for still further increases in prices.

Old Metals.

New York dealers' buying prices, per 100 lb., are all nominal, as follows:

Strictly crucible copper	$15.50	to	$15.75
Light copper	13.75	to	14.00
Uncrucible heavy copper	15.00	to	15.25
Uncrucible copper wire	15.25	to	15.50
No. 1 machine composition	12.25	to	12.50
Heavy brass	10.00	to	10.25
No. 1 composition turnings	11.25	to	11.50
No. 1 brass turnings	10.50	to	11.00
No. 1 brass clippings	12.00	to	12.50
Cocks and faucets	10.50	to	11.00
Light brass	8.50	to	9.00
Solder joints	7.25	to	7.50
Heavy lead	4.37½	to	4.47½
Tea lead, nominal	3.87½	to	4.00
No. 1 pewter	22.00	to	23.00
Scrap zinc	10.50	to	11.00
Tin pipe	30.00	to	31.00

COPPER PRODUCTION ON ISLAND OF CYPRUS.

United States Consul Arthur Garrels, of Alexandria, Egypt, writes that an American copper-mining syndicate at Skouriotissa, Cyprus, has applied for government permission to lay a railway from its mines to the port of Karvostassi so as to facilitate the shipping of ore. The total quantity extracted from these mines to date aggregates about 4,000,000 tons. It is believed that after the proposed tunnels in the mines are completed the daily output of ore will approximate 1,000 tons. Three more American mining engineers will soon arrive to join the syndicate's staff.

FINANCIAL TROUBLES.

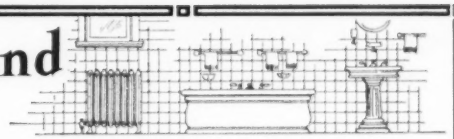
Milwaukee, Wis.—George A. Glassner, a contracting plumber of 1125 Cherry Street, has filed a petition in bankruptcy, scheduling his liabilities at $5,827.24 and his assets at $4,273.68.

St. Joseph, Mo.—Albert Roster, a master plumber at 2619 Seneca Street, has filed a petition in bankruptcy, scheduling his liabilities at $15,000.

Grand Rapids, Mich.—A petition in bankruptcy has been filed by Jacob Tannenburg, a plumber at 326 Goodrich Street. His liabilities are listed at $5,160 and his assets at $2,000.

John A. Brooks, the well known master plumber of Toledo, O., is receiving congratulations from his friends on winning the first prize of $500 in the sales contest of the Trenton Potteries Co., of Trenton, N. J. Mr. Brooks attributes his success to a series of advertisements in a local newspaper.

Among the Plumbing and Heating Contractors



Illinois

Chicago and Vicinity.

According to an official announcement at the office of the Chicago Master Plumbers' Association, it is now possible for master plumbers to procure permits for meter installations at the city hall, a new rule which has recently gone into effect, and which eliminates the loss of time hitherto occasioned by the necessity of having to secure these permits at Indiana Avenue and Fourteenth Street, at one of the municipal work shops.

The question of the disposal of refuse from catch basins came up for discussion at a recent meeting of the Chicago Master Plumbers' Association. In view of the fact that some of the city dumping stations have refused to handle this refuse, a committee of master plumbers was appointed to wait upon Health Commissioner Dr. Robertson and register a protest. The commissioner agreed that the trade had a legitimate grievance, and he stated that he would endeavor to make arrangements for the handling of this refuse by an order from his office, or, if found necessary, he would remedy the matter by the recommendation of a special ordinance governing the question at issue.

The annual ball of the North and West Side Master Plumbers' Pleasure Club, which has for a number of years been one of the big social events of that organization, will be held on Wednesday evening, December 8th, at the Northwest Hall, West North and North Western Avenues. A pleasant time is guaranteed to all the participants in this affair.

A lapel card, to be used in tagging members, has recently been introduced by the Chicago Master Steam Fitters' Association. The use of this tag, it is said, tends to prove a great aid in linking the name of the individual, and removes any feeling of strangeness among members during meetings of the association. The tag, which is shaped like a policeman's shield, contains the following inscription: "How Many of Your Competitors Do You Know? How Many Know You? Get Together. My Name Is ———. What's Yours?"

The plumbing and heating firm of Iffert & Brown, formerly of 219 North Clark Street, is now occupying new and larger quarters at 307 River Street.

Fred Grosch, of 2745 Armitage Avenue, has recently been awarded the contract for the installation of a modern plumbing system in a two-flat building to be erected at 4121 North Sacramento Avenue.

The contract for the installation of a heating system in a four-family building, to be erected at 4015 Le Claire Street, has been awarded to W. R. Black, of 3958 Waveland Avenue.

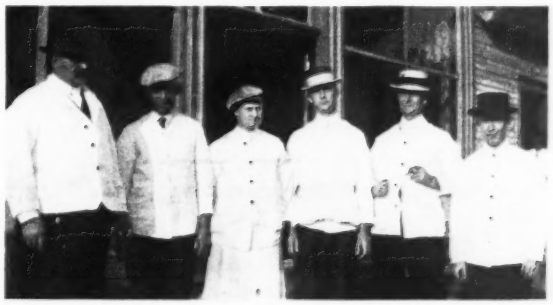
C. S. Wallace, of 1621 Orrington Avenue, Evanston, will install the plumbing in three residences to be built on Broadway, near Central Avenue.

A. W. Bahn, well known among local master plumbers and fitters, is at present "Seeing America First" on the Pacific coast. With his family he has visited the Panama-Pacific and the San Diego expositions, and has made extended trips through picturesque sections of southern California. On a postal card bearing a Mexican stamp, Mr. Bahn states that he and his are on the boundary line between U. S. A. and Carranza's domain, but he adds—"Illinois for mine."

A number of criticisms have been directed against the method which is employed in operating the public comfort station which was erected in Washington Square, Clark Street and Walton Place, some months ago. It is said that this station, which has a compartment for both men and women, is usually found closed after 6 p. m., and sometimes earlier. The public, including master plumbers and fitters, have been unable to understand why the authorities have deemed it necessary to inaugurate such a rule. It is pointed out that a comfort station can be of little service to the public unless it is open during the hours when pedestrians are particularly anxious to use its facilities.

Other Cities in the State.

John O'Neill & Sons, of 208 Main Street, Peoria, have several nice contracts on hand, among them the heating of the Bloomington High School; consideration $55,000; heating and ventilating the Whittier School, Peoria, $8,500, and the remodeling of the heating system in the Kingmann School at Peoria, $3,100.



Master Plumbers of Peoria, Ill., in the Role of German Waiters at their Recent Annual Outing.—From left to right: Daniel O'Connor, Thomas Cody, Richard Schaeffer, W. H. Entwistle, John Boyd, and Samuel Dooley.

Hitchcock Bros. Co., 104 South Washington Street, Peoria, has secured the following contracts: Plumbing and heating Christian Science Church, $7,000; heating and sprinkler fitting in Oalsford & Fahnestock building, $13,000; heating and sprinkler fitting in Keystone Steel & Wire Co.'s plant, $6,700; besides the usual amount of smaller work in Peoria. They are also doing the heating in two garages in Bloomington, one for C. N. Williams, $4,000, and the other for George Giltner & Sons, $4,200.

Dailey & O'Brien Co., 322 South Jefferson Avenue, Peoria, has been awarded the contract for the plumbing and heating in the new city hall at Monmouth, on its bid of $5,360.

J. M. Shea & Co., 1025 South Adams Street, Peoria, will install the heating system in the new county jail in that city. Consideration, $4,400. The plumbing contract was awarded Thomas J. Cody, 1307 South Adams Street, for $8,887. This building, when completed, will cost $100,000,

and will be one of the most modern, from the standpoint of sanitation, of any in the middle west. There will be 107 cells, each of which will be equipped with a water closet, bubbling drinking fountain and lavatory.

James Shea, of J. M. Shea & Co., and P. J. Nailon, of Nailon Bros., both of Peoria, were encountered in Mackinaw. Both report excellent business. Among other contracts Mr. Shea has on hand are: Plumbing in the Bartonville Hospital for the Insane, $7,869; heating in a warehouse for William Swords, $1,750, and the laying of water mains for the city of Eureka, $16,500.

Joseph P. Quigley, of Galesburg, has been awarded the contract for installing plumbing and heating in the First Christian church. Consideration, $7,800.

C. M. Meneley and Roy M. Ross, of Champaign, have formed a partnership under the name of the Meneley-Ross Co. and have purchased the plumbing business of E. A. Robinson in that city. Mr. Meneley has a large acquaintance in the trade, being a member of the American Society of Sanitary Engineering and having formerly been connected with the N. O. Nelson Mfg. Co., of St. Louis. Mr. Robinson retires from active business, and expects to enjoy the fruits of his 29 years' labors in the trade, being one of the oldest plumbers in Champaign. The best wishes of his many friends in the trade will follow him. The new firm would like to receive catalogues from jobbers and manufacturers.

Delaware

J. Dunbar, of Wilmington, Del., has secured the contract to install plumbing and heating in the new building which is being erected at the corner of Fourth and Market Streets.

Gawthrop & Bros. Co., of 104 West Fourth Street, Wilmington, has been awarded the contract for the installation of an up-to-date heating system in the building at Tenth and West Streets, which is being remodeled for the Knights of Columbus.

Pennsylvania

Pittsburgh and Vicinity.

Bids for the heating, ventilating and plumbing to be done on the City Hall-Court House building at Pittsburgh, Pa., were opened last week. Contracts will be awarded very soon. The lowest bid submitted on the plumbing was furnished by E. R. Shollenberger, Hamburg, Pa., but the statement is made that no unit prices were given, and that the bid may be rejected. The following tabulations show the different bids on various materials:

Heating and Ventilating.

	A	B	C	D
Baker, Smith & Co., Pittsburgh	$135,950	$135,000	$139,000	$137,500
F. E. Geisler Co., Pittsburgh	144,400	142,880	147,290	145,805
The McGinniss Co., Pittsburgh	148,148	146,539	148,943	147,793
Thompson-Starett Co., Pittsburgh	155,960	154,762	158,536	157,557
Hanley-Casey Co., Chicago	156,780	155,100	159,500	158,000
Fitzpatrick-Hoepfner Co., Columbus	156,971	155,771	161,971	160,971

A—Per specification.
B—Steel pipe.
C—Extra heavy wrought iron pipe.
D—Extra heavy steel pipe.

Plumbing.

	Per Spec.	A	B	D	E	Vacuum Cleaner	Sterilizer
E. R. Shollenberger, Hamburg, Pa.	$161,000	$148,400	$149,600	$157,200	$161,800	$5,400	$3,700
Weldon & Kelly, Pittsburgh	165,500	151,256	152,345	161,990	166,459	5,300	3,700
W. N. Sauer, Pittsburgh	174,776	161,428	158,024	170,405	175,784	6,895	3,589
Geo. H. Soffel Co., Pittsburgh	175,700	160,638	164,281	170,639	176,514	4,900	3,500
Buerkle Plumbing Co., Pittsburgh	190,542	178,240	172,807	186,636	191,750	3,190	3,408

A—Galvanized iron pipe.
B—Cast iron pipe.
D—Steel pipe.
E—Wrought iron pipe.

Philadelphia and Vicinity.

P. J. Hoft, of 245 South Eighth Street, has been awarded the contract for installing a heating system in the building occupied by the Miller Drug Co., on Second, near Arch Street, for the Guarantee Trust Co.; consideration, $1,500.

J. J. Mulhern, of 3625 Haverford Avenue, has the contract for under-draining work at the corner of Thirty-seventh and Hamilton Streets.

George W. Wismer, of 523 North Fortieth Street, has been awarded the contract for heating the property at 3610 Lancaster Avenue, for the F. A. Poth Estate.

F. A. Funk, Clearfield Street, has been awarded the contract for heating and plumbing in the property at the corner of Montgomery and Belgrade Streets; consideration, $950.

Hoben & Doyle, of Twenty-first and Pine Streets, have the contract for a lot of plumbing work at Evans Dental College.

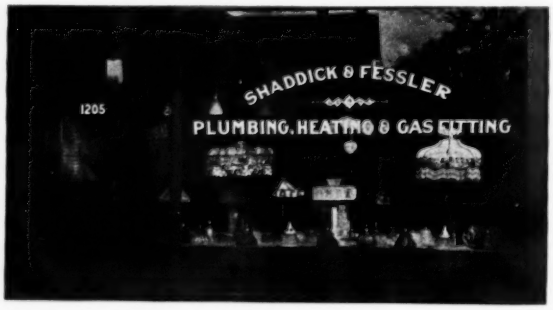
W. H. Davenport, of 104 Conarroe Street, has been awarded the contract for heating and plumbing in the addition to Metzlers Hotel, Manayunk, Pa.

Thomas D. Clark, of 277 South Eleventh Street, has been awarded the contract for plumbing in the new automobile building, being erected by Gommery-Schwartz Co., on North Broad Street.

Armbrust & McGurk, 1936 Catherine Street, have secured the contract for plumbing twelve houses on Broad Street.

L. Wanner, Jr., Ludlow Street, has been awarded the heating and plumbing contract in the Home for Feeble Minded, which will be erected in Vineland, N. J.

Among the enterprising plumbing and heating concerns at New Castle, Pa., the firm of Shaddick & Fessler is well and favorably known in and about that city. The

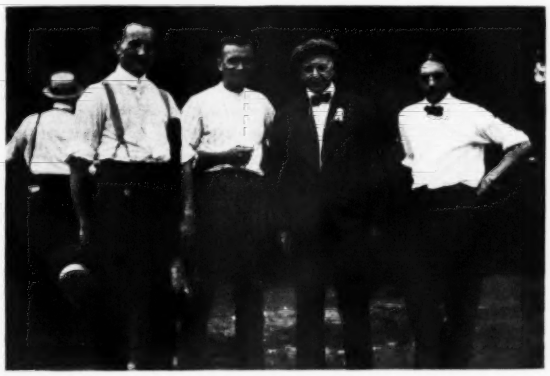


The Show Window of Shaddick & Fessler's Plumbing and Heating Establishment, at New Castle, Pa.

partners in the business have for years maintained attractive window and showroom displays, always adhering firmly to the policy that a neat and inviting place of business is a trade-pulling asset.

New York

J. A. Freeman, 32 Margaret Street, Plattsburg, has secured the contracts for plumbing and heating in the custom house at Ogdensburg, Charles Mason's residence in Peru, and Peter Fessett's home in Sciota. He will also install the heating in the Sister of Saint Louis Convent and in St. John's Episcopal church. The summer colony at Point Rock is being extended and J. P. O'Brien, owner and builder, has let the plumbing contracts to Mr. Freeman.



At the Recent Outing of the Manhattan Master Plumbers' Association.—From left to right: F. J. Schill, Louis Wheelwright, Jeremiah Murphy and Percy McElrath, all of New York City.

The plumbing and heating contract for the Lady Victory church at Plattsburg has been awarded to Spear Bros., of that city. This firm will also install the plumbing and heating in Allan McDougal's residence on Mansfield Avenue.

Michigan

The Carroll Plumbing & Heating Co., Detroit, has been organized with a capital of $1,000.

New construction in Detroit during the month of October aggregated $2,611,500, an increase of $1,120,270 over the same month last year. There were 737 permits for new structures and 161 permits for additions and alterations.

Otto Wurm & Co., Detroit, has the contract for heating the new Masonic Temple now being erected in Highland Park.

Connecticut

The Meriden Plumbing Co., of Meriden, has the contract for plumbing in a two-family house being erected on Clinton Street for J. B. Gilhooly.

A. Epstein & Son, of Hartford, have the plumbing contract, and Louis Feingold the heating contract for a three-family house which is being erected on James Street.

Building operations continue brisk in Bridgeport, where a number of dwelling houses and other contracts for plumbing and heating have recently been let. A new business block is to be erected on Main Street for the Stratford Trust Co., and the plumbing and heating in this structure will be done by H. C. Lovell & Co.

The plumbing in a three-story brick building to be erected on Alfred Street, Bridgeport, will be installed by L. A. Vessey. Carlson & Benson have contracts for plumbing and heating in two two-apartment houses on Davison Street, Bridgeport, and Rockwell & Ford have similar contracts for three houses to be built for J. M. Blackman in different sections of the city.

Washington

Seattle and Vicinity.

The Butler Construction Co., Central Building, Seattle, has been awarded the contract for the construction of the one-story, mill-constructed, 240x55 ft., store building at 1000-1022 Third Avenue, for the Puget Mill Co. The general contractors will receive bids shortly for the plumbing, heating and electric wiring. The structure complete will cost $30,000.

Architect Harlan Thomas, Arcade Building, Seattle, has awarded the contract for the plumbing in the C. C. Rieber business building in Enumclaw to the Twin Plumbing & Heating Co., of Enumclaw.

B. J. Erickson, 5011 Meridian Avenue, Seattle, has awarded the contract for plumbing in a business building which is being erected in Bremerton, to T. L. Avery, of Bremerton; and the contract for the heating to the Queen City Heating Co., of Seattle.

Architect Julian Everett, Boston Block, Seattle, has let the contract for plumbing for the Smith apartment, Fourth Avenue and Marion Street, to Zindle-Cook Plumbing & Heating Co., 1638 Ninth Avenue, Seattle, for about $5,000; and the contract for plumbing in the Smith Hotel adjoining the apartment house to the P. J. Glennon Plumbing Co., 711 Fourth Avenue, for about $6,000.

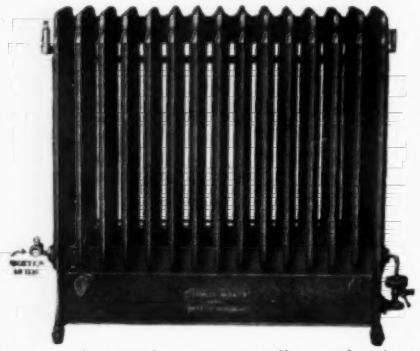
Reuben W. Jones, Secretary of the Seattle School Board, estimates that about $15,000 will be expended on plumbing, and $7,500 on heating systems in the various school buildings in Seattle during 1916.

The Electric Sales Corporation, 1019 Post Street, has closed a contract for the installation of an electric heating system in the pretentious residence of J. G. Eddy, in Everett. This installation covers 18 rooms. The entire plant will be operated by automatic thermostatic regulation and will be the most modern equipped electric heating plant in use in any residence in Snohomish County.

The Washington Securities Co., of Seattle, has authorized M. J. Hursen Co., Globe Block, Seattle, general contractors on the new 11-story steel and concrete, $500,000 business structure, under erection on Fourth Avenue and Stewart Street, to install a heating plant at a cost of approximately $15,000. The Hursen Company will receive figures for the installation about November 20th.

The Board of Regents, University of Washington, Henry Building, Seattle, has awarded a contract for the installation of a heating system in the proposed $150,000 Home Economics Building on the campus of the University of Washington in Seattle, to J. A. Scherer, 11 Pine Street, Seattle, on a bid of $12,029. The contract for plumbing was awarded to the Rautman Plumbing & Heating Co., 118 King Street, Seattle, on its bid of $12,823. The general contract for this structure is held by Finne & Gjarde, Northern Bank Building, Seattle. Plans for the building were prepared by Architects Bebb & Gould, Denny Building, Seattle. Practically every plumbing and heating contractor in Seattle and several from Tacoma, submitted bids for these two contracts.

Why the Franklin Gas-Fired Steam Radiator?



Because—It provides automatically regulated steam heat by generating the steam WITHIN ITSELF. Utilizes every heat unit.

Any one room can be heated independently of the others.

No waiting for fire to burn. In 15 minutes after gas is lighted there is ample heat.

CLEANEST SYSTEM. No soot, smoke or ashes. No flue needed.

ECONOMICAL. Thermostatic valve saves gas—pay for heat only when it is actually in use.

DURABLE. Nothing to get out of order or depreciate.

A most satisfactory system from every viewpoint. Write for our demonstrating offer and descriptive matter.

The Franklin Company
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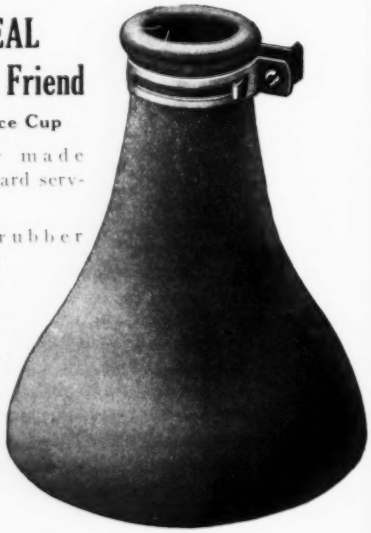
The REAL Plumber's Friend

Regular Force Cup



Substantially made for long and hard service.

Furnished rubber only, with or without valve, or with 42-in. wooden handles when ordered.

We make a full line of Force Cups in all the regular sizes.

When you buy

REDTEX TRADE MARK BLACKROCK TRADE MARK

you get the benefit of our thirty-five years' manufacturing experience.

Write for Catalog, Prices and Discounts.

THE CANFIELD RUBBER COMPANY
Railroad Avenue and Garden Street, BRIDGEPORT, CONN.

The City Council, Spokane, has passed a resolution providing for the installation of a heating system in the city garage on Mission Avenue, and has appropriated $1,000 for this purpose.

M. Isbister, of Spokane, on a bid of $3,450, has secured the contract for the installation of both heating and plumbing in the Catholic School of the St. Francis Assissi Parish at Jefferson Street and Heroy Avenue, Spokane.

Directors of School District No. 2, Dayton, have decided to erect a new school building on the site of the structure recently destroyed by fire. The new building will have an elaborate system of heating and plumbing.

A portion of a business block at 1206-8 Second Avenue, Seattle, will be remodeled for Stone, the Tailor, by M. J. Hursen & Co., Globe Building, Seattle, who will soon ask for bids for plumbing, heating and electrical work.

E. L. Barnes, in charge of the affairs of the Tacoma Central Heating Co., Tacoma, which has a franchise to construct and operate a central heating system in Tacoma, reports that his company will begin work of constructing the heating plant by the 10th of December, at the latest.

Oregon

The Wallowa Hardware Co., Wallowa, will install a heating plant in the residence of U. R. Wilson, in that city.

Architects Jacobberger & Smith, Board of Trade Building, Portland, have awarded the contract for plumbing the brick business structure, to be built for Gay Lombard at Park and Davis Streets, Portland, to Fox & Co., of 209 Second Street, Portland. The heating contract was awarded to Bunce & Co., Portland.

Ruedy Bros., 266 Front Street, Portland, have secured the contract for plumbing the 3-story brick building, being built for Glafke & Co., Portland.

The date of opening bids for fireproofing furnace rooms and for automatic sprinkling equipment for the various schools in Portland, for which bids were to have been opened November 4th, has been extended by the School Board to December 2nd. Plans and specifications are on file with F. A. Naramore, Superintendent of Properties, Courthouse, Portland.

A. W. Kutsche has sub-let the contract to J. C. Bayer & Co., of Beaverton, for the installation of a heating plant in the school building under construction in that city.

Tourtellotte & Hummel, architects, Rothschild Building, Portland, have awarded the contract for a heating plant in the Sunday School temple for the Methodist Church at Twelfth and Taylor Streets, Portland, to A. L. Howard, 171½ Eleventh Street, Portland.

Idaho

E. W. Sims, Sandpoint, Idaho, has been awarded the contract for plumbing in the addition to the county poor farm in Bonner County. The contract for heating has been let to W. M. Foster, also of Sandpoint.

The County Commissioners, Elmore County, at Mountain Home, have awarded the contract for the erection of Elmore County's courthouse to C. E. Johnson, of Mountain Home. The total cost of the completed structure will be $35,224.80. The contract for the heating and plumbing systems went to E. B. Hughes, of Gooding, on his bid of $3,685, for both.

California

San Francisco and Vicinity.

The building records of the various cities along the Pacific Coast for October are thought to be generally favorable for future business. In almost all cases the valuation of the work undertaken in October exceeded the month preceding, and in a number of cases it ran well up to the record for October, 1914. In San Francisco the October building amounted to $1,236,249, a gain of about $150,000 over September, and a little over $100,000 below the record for October, 1914. Other California cities and towns, generally, show a gain over recent months, with the exception of Los Angeles, where building is still dragging a little.

J. J. Hurley, of Jeremiah & Co., heating and ventilating engineers, of Boston, is in San Francisco this week visiting the trade and the Exposition.

The Peck-James Thermos Co., of San Francisco, has been organized to deal in and install heating systems and heating apparatus. Quarters have been secured at Pine and Battery Streets, where a storeroom is being remodeled to accommodate the company. George D. Peck, who formerly represented the Pressed Metal Radiator Co. here, is manager of the new organization.

Two contracts have been let this week for the wrecking of the smaller buildings at the Panama-Pacific Exposition, the Massachusetts and Ohio state buildings, and the trade is reminded that the Exposition is now nearing its close, and that the wrecking of the buildings and the disposal of second hand fixtures are likely to be features of the trade during the winter months.

The San Francisco oil well supply men have been obliged to re-order quite extensively, owing to the blocking of the Panama Canal, as a lot of oil pipe is delayed there.

Emile Hymans, San Francisco representative for the Eljer Co., of Cameron, W. Va., and for the Never-Split Seat Co., of Evansville, Ind., reports a large lot of small apartment house and residence work under way, with special call for pedestal lavatories for high class residences.

Kiernan & O'Brien, of 1754 Mission Street, San Francisco, were the low bidders on the University of California job at Berkeley, where a considerable extension is to be made to plumbing in the University Library.

Other Cities in the State.

E. W. Jewell, of Truckee, has purchased the plumbing business of A. E. Wilson.

The city trustees of Pasadena have opened bids for the proposed sewage pumping plant, and contracts will be awarded shortly. Bids for air compressors ranged in price from $415 to $1,185 each, and for ejectors from $285 to $897.

The Reese Oil Burner Manufacturing & Supply Co. has been incorporated in Los Angeles.

Husted Bros. & Oetzman have succeeded to the plumbing business of Husted Bros. in Redlands.

The board of public utilities of Riverside is in the market for four-inch, six-inch and eight-inch pipe, to the aggregate value of $6,540, for replacing worn out water pipe.

The Southern Gas Co., of Whittier, which owns a number of natural gas wells at Coyote Hills, is preparing to lay a pipe line connecting these wells with the city, for the purpose of supplying gas for lighting and heating purposes.

Gallup, N. M.—Miles Conrad is erecting a new building for his plumbing business.

The Opinion of An Expert

D. D. Kimball, President of the American Society of Heating and Ventilating Engineers, Member of the New York State Commission on Ventilation, an engineer of 20 years' experience, and an eminent authority on the design and installation of efficient heating equipment, said, in part, when addressing a large and important association, recently:—

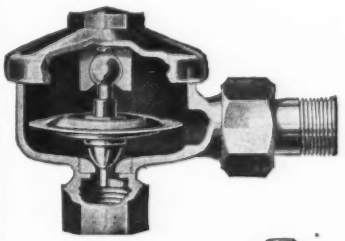
"The thermostatic radiator return valves (of perhaps three or four of the best makes) are most satisfactory, being more efficient, durable, and noiseless. These valves should be heavy in every part, require no strainer, the valve therein should close against the return pipe connection and not against the radiator connection, and the valve should have a vertical movement of not appreciably less than one-quarter of an inch from the seat when full open. A less movement will result in holding water in the radiator much of the time."

"It is a misfortune that advantage has been taken of the success and popularity of the vacuum and graduating heating systems by some manufacturers who have foisted upon the public many inefficient and cheap graduating, float and thermostatic valves which have, in many cases, brought discredit upon the vacuum heating system."

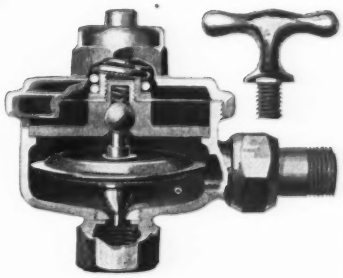
Please note carefully the last paragraph. Mr. Kimball is right—many companies have taken advantage of the success of vacuum heating by trying to flood the market with inefficient equipment of all kinds. It therefore is of the utmost importance that, in addition to selecting vacuum or vapor heating equipment for most efficient service, it is equally important to select equipment manufactured by a long established company, who has passed through the experimental stage, and whose equipment will insure you and your customers most satisfactory and lasting service.

Our Vacu-Trap measures up in every respect with the essentials for return line radiator valves, as mentioned above by Mr. Kimball.

Have you read our catalog describing this Vacu-Trap, and in addition, the complete line of RELIABLE Equipment for air line and return line vacuum, and vacu-vapor installations? If not, a post card request will bring a copy promptly.



Little Wonder Vacu-Trap



No. 2 Flushing Vacu-Trap

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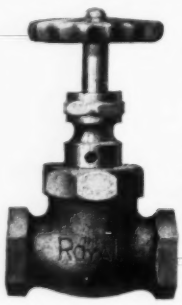

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A quarter turn of the handle closes the waste.

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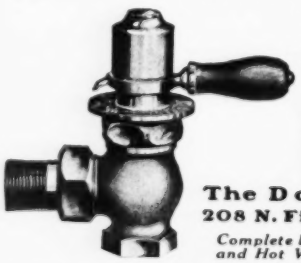
Dole

New Packless Graduated Radiator Valve



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Artistic design.
Fool-proof.
Position of handle shows degree of opening.
Operates with one-half turn.
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The Dole Valve Co.

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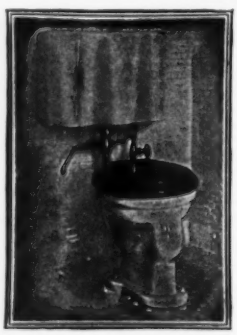
Complete line of Standard Steam and Hot Water Radiator Valves



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Nothing in Tank but Air and Water.

Write us today and find out all about it.

American Valve & Tank Co.

INDIANAPOLIS, U. S. A.

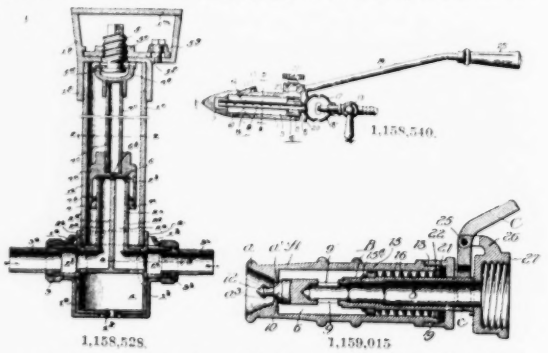
Patents

Plumbing Department.

1,158,528. Stop and Waste Box. Fred William Meyer, Louisville, Ky. A stop and waste box comprising a casting having vertical passages in its shank and inlet and outlet nipples communicating therewith at its lower end, a cup-shaped member telescoping the shank of the casting and adapted to close the end of one of the passages in said casting; a gasket forming a slidable closed connection between the lower end of said cup and exterior of the shank, said shank having a passage extending from a point outside of the cup to a point inside thereof when the cup is in its lowermost position, to permit drainage from the cup when the valve is closed; a casing to which the casting is attached, a top box connected to said casing, a valve operating member in said box, a connection between said valve operating member and said cup-member; a sand box beneath the casting, and shoes attaching the box to said casting, substantially as described.

1,158,540. Soldering Iron. Kosti Nikoloff and Charley Nikoloff, Detroit, Mich. A soldering iron comprising a body provided with a bore, said body having an opening in the top thereof in communication with the bore of said body, a shield disposed at an inclination to the body over the opening thereof with the forward edge of said shield mounted in said body and the sides of said shield secured to the sides of said body, a handle bar detachably connected to the inner end of said body and capable of being set at a right angle relative thereto, and means detachably connected to the inner end of said iron body for heating said body.

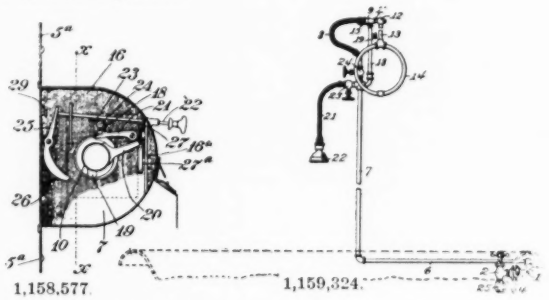
1,159,015. Hose Nozzle. Henry Gibbs, Chicago, Ill., assignor to W. D. Allen Manufacturing Co., Chicago, Ill., a corporation. A hose nozzle comprising a hollow stem having a coupling at its inner end and a valve at its outer end, a hollow body portion slidably supported and guided upon said stem and having a discharge opening at its outer end with which said valve co-operates, a spring interposed between said stem and said body portion for normally holding said valve in closed position, and a shifter interposed between said parts for shifting said body portion upon said stem against the tension of said spring, substantially as described.



1,158,528. 1,158,540. 1,159,015.

1,158,577. Toilet Paper Holder. Martin Spall, Alliance, Ohio. A toilet paper holder comprising, in combination, a case, a paper roll spindle, means for securing a paper roll thereto to rotate therewith, means for latching the spindle from rotation, a key for releasing the said latching means, means for latching said key when the same has been actuated, and means carried by the paper roll spindle for automatically releasing the key when the paper roll spindle is turned.

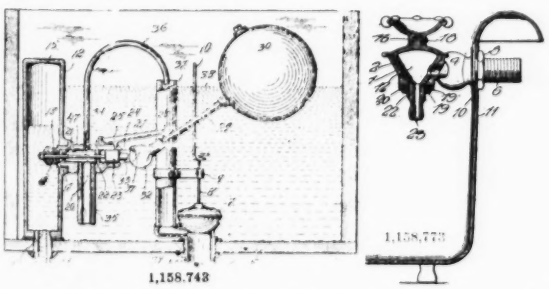
1,159,324. Bath Fixture. Charles A. Minnie, Wellsburg, W. Va., assignor of two-ninths to Peter Seltner, McMechen, W. Va., and two-ninths to George Ogden, Wellsburg, W. Va. A shower fixture for bath tubs, comprising an upright pipe disposed laterally of the tub at a point intermediate the ends of the latter and having connection at its lower end with a source of water supply, a supporting member carried by said pipe, a conduit mounted on said member, a tube providing communication between said pipe and one end of said conduit, a second pipe having a flexible joint connection with the opposite end of said conduit, a shower ring carried by said second pipe and normally occupying suspended inoperative position, and pivoted means for supporting said ring in a horizontal position.



1,158,577. 1,159,324.

1,158,743. Noiseless Float Valve. Swan T. Swanberg, Denver, Colo. Noiseless inlet valve mechanism for water closet tanks, comprising in combination with the tank, a chamber closed at its upper extremity and open at its lower extremity for the entrance of the water on its way to the tank, the chamber having an opening for the escape of the water into the tank, and a valve for controlling said opening, means adapted to engage the stem of the said valve for locking the latter in the open position, and means for disengaging the first named means from the stem of the valve, the valve being located in said chamber and acted on by the water pressure therein for closing purposes.

1,158,773. Valve. Andrew J. Barr, Mansfield, Ohio. In combination, a valve casing having a tapered bore whose smaller end opens through the center of the lower end of said casing, said lower end being disposed in a horizontal plane, a tapered valve plug rotatable in the bore and having formed on its contracted lower end a tubular externally threaded discharge nipple depending below the casing and designed for reception in the flexible tube of a bath spray, a nut threaded on the nipple and spaced below the lower end of the casing, a coiled spring surrounding the nipple and



1,158,743 1,158,773

compressed between the nut and the casing, and an annular guard and stop flange surrounding the spring and extending from the nut into close proximity to the horizontal lower end of the casing, whereby to prevent catching of wash cloths and the like on the spring, and to also prevent excessive endwise shifting of the plug in the casing when the tube of a bath spray is being forced onto the discharge nipple.

1,159,090. Furnace for Water Heaters. Charles J. Reilly, Catskill, N. Y. The combination with a combustion chamber

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High Pressure Tested

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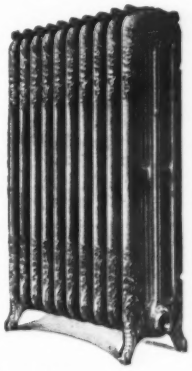

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The Patterson Hot Water Tank

is a long stride in advance in tank construction. Unlike the ordinary hot water tank, there are no coils and return bends to become leaky.

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The Patterson contains a number of tubes having greater area than the steam pipe, so that all condensation discharges as rapidly as it forms.

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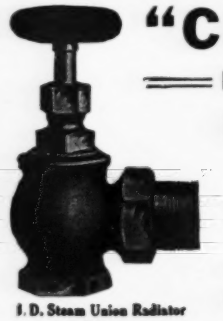

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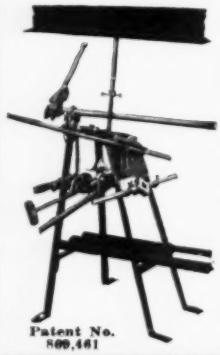

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All we ask of you is to drop us a line and we will send you their names and addresses, and you can convince yourself that you must sooner or later have one. You can save the cost of this tool on the first job.

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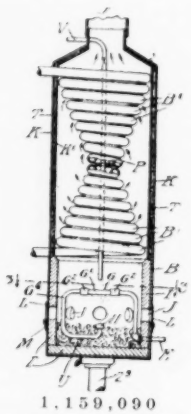
having an absorbent wick-like bottom, of a gas generating coil located in said chamber above the air supply, a heating and deflecting plate integral with the coil, a burner located beneath said plate, a gas supply pipe leading from the generating coil to said burner, and an oil supply pipe communicating with the generator, and means for discharging water in a liquid form upon the upper surface of said plate independent of the gas and oil supply.



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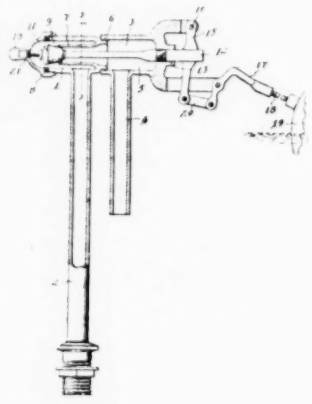
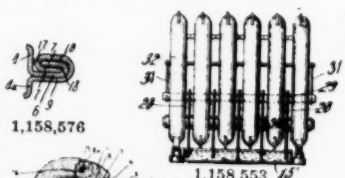


1,159,182.

1,159,182. Ball Cock. John J. Cunningham, Gadsden, Ala. A ball cock comprising a supply pipe adapted to be secured in the flush-tank, and the upper end of which terminates in a hollow, transversely extended member having one end screw threaded and having an internal concentric re-entrant neck located opposite the outlet of the supply pipe, and having a valve seat at one end, a member screwed to one of the screw-threads, the interior of which is in communication with the interior of the first named member, and provided with an outlet pipe, a valve stem slidably supported therein, a lever and float mechanism for moving the latter, and a valve secured thereon in position to automatically seat itself upon the valve seat on the re-entrant neck.

Heating Department.

1,158,553. Humidifier. Foster C. Phelps, Waukesha, Wis. A humidifier, comprising a receptacle having an open top, a removable rectangular wire frame mounted in said receptacle and provided with means extending horizontally and longitudinally across its top and having notches formed therein, and a plurality of absorbent units supported by said frame, bodily removable therewith, and directly engaging in said notches to retain them in spaced relation with their lower ends projecting into said receptacle to contact with the water contained therein, said horizontal notched means being adapted to be positioned longitudinally between the coils of a radiator to support said absorbent units transversely between the coils of the same.



1,158,576

1,158,553.

1,158,656

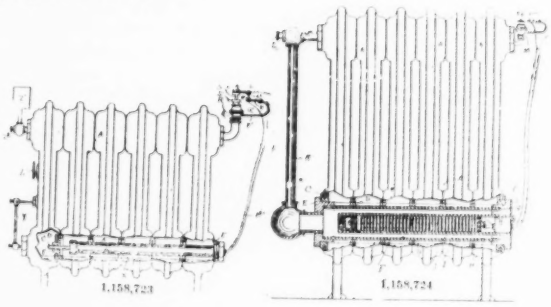
1,158,633.

1,158,576. Method of Making Sheet Metal Radiators. Charles Sonneborn, West Pittsburg, Pa., assignor to Pressed Metal Radiator Co., Pittsburgh, Pa., a corporation of Pennsylvania. The method of seaming sheet metal hollow articles, which consists in applying to each other two dished body

sections with projecting edge portions, one of said sections being larger than the other but having its body portion of lesser width, and then rolling up the projecting edge portions of the two sections to form a several-walled seam and thereby drawing the body portion of the larger section outwardly to substantially the dimension of the body portion of the smaller section.

1,158,656. Pipe Tongs. Charles L. Dunham, Pennsboro, W. Va. A pair of pipe tongs comprising a handle having a square opening at one end, a pair of supporting jaws providing seats and having a pin eccentrically attached thereto for connecting said jaws in parallelism, said pin extending through said opening, a gripping jaw pivotally connected at one end with the ends of said supporting jaws, and a cam member mounted upon the pivot for said gripping jaw and capable of cam engagement with the latter and further capable of being shifted by said handle causing thereby the gripping jaw to secure a pipe on said seats to prevent slipping of the latter, said handle having a lateral protuberance and said cam member having a cam surface engaged by said protuberance when the handle is shifted causing thereby the shifting of said cam member to move the gripping jaw to or from operative position.

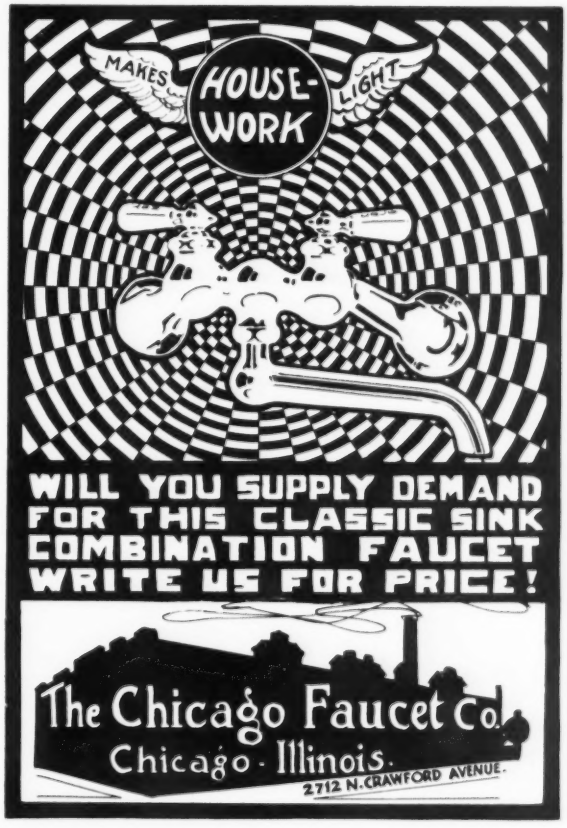
1,158,633. Pipe Hanger. Lewis A. Carpenter and Richard Middleton, Revere, Mass. In a pipe hanger, in combination, a sheet metal pipe engaging member having a substantially central opening, a metal sleeve having a reduced end portion extended through the said opening into the pipe engaging member and expanded within the latter to lock the said sleeve to the pipe engaging member, said tube being slitted at its free end, a tapered nut co-operating with the split end of said sleeve, a threaded rod extended from within the pipe engaging member into said sleeve to engage said nut and having a head within the pipe engaging member bearing against the expanded end of the sleeve within the pipe engaging member, and a hollow stem into which the split sleeve is inserted and expanded into contact therewith, said hollow stem having an internal shoulder at its rear end, for the purpose specified.



1,158,723 1,158,724

1,158,723. Electric Steam and Hot Water Radiator. John D. Ross, Portland, Me., assignor of one-half to Clinton T. Swett, Portland, Me. In a device of the character described, a plurality of radiator sections provided with a conduit at the bottom, a chambered bonding rod centrally located in said conduit and of less diameter than the diameter of said conduit, a washer engaging the wall of one of the sections adapted to support the inner end of the rod, a threaded nipple on the first section adapted to support the outer end of said rod, and an electric heater located in said chambered rod.

1,158,724. Electric Radiator. John D. Ross, Portland, Me., assignor, by direct and mesne assignments, to Electrical Steam Radiator Co., Portland, Me., a corporation of Maine. An electric radiator comprising a series of radiator sections having alined communicating openings in the bottom thereof, threaded nuts adapted to close said openings at the ends of the radiator, concentric tubes in said alined openings supported by said nuts, the outer tube being provided with an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WILL YOU SUPPLY DEMAND FOR THIS CLASSIC SINK COMBINATION FAUCET WRITE US FOR PRICE!
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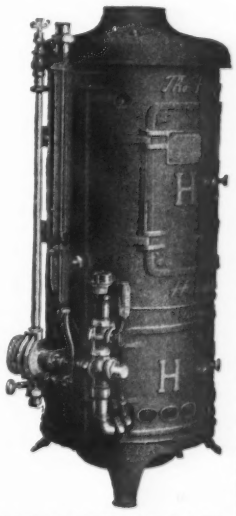

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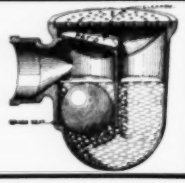

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compared with any other hanger.

Simplest and easiest to attach. One piece of ¾ and ⅞-inch hoop steel with four V-shaped prongs that drive securely into wood.

No nails or screws to jar loose.

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We Make Good Specialties

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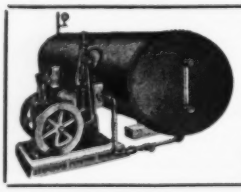

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makes pipe threading easy and reduces expense to a minimum.

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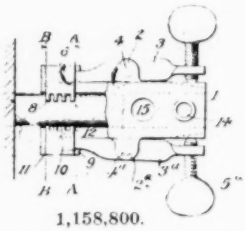
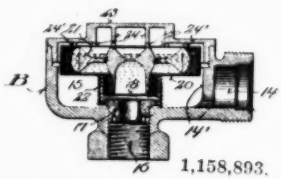
intake near the end and with a circulation pipe leading from the other end to the top of the radiator and the inner tube being closed to the radiator sections and provided with an electric heater.

1,158,800. Pipe Cutter. Joseph Grauer, New York, N. Y. In a pipe cutter, a housing, levers adapted to rock on said housing, one end of each of said levers having means for rocking said levers, an adjustable cutter at the other end of one of said rocking levers, and an adjustable pipe holder at the other end of the other of said rocking levers, said pipe holder being angular in form, and a second pipe holder being straight in form and disposed opposite to the angular pipe holder, handle bars adapted to be connected with said housing, alternative or supplemental holes in said housing for the purpose of manipulating the said tool upon the insertion of a bar therethrough, and sight cutaways in said housing.



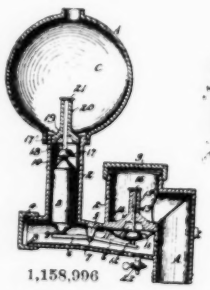
1,158,800.



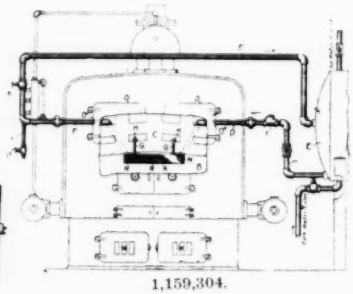
1,158,893.

1,158,893. Valve for Heating Systems. John S. Brennan, Milwaukee, Wis. A thermostatically controlled valve for heating systems comprising a cap-closing casing having a receiving throat and a discharge mouth constituting a valve seat, a diaphragm fitted into the casing having one of its walls extended to form a centrally disposed offset nib provided with a flat working face adapted to serve as a closure for the valve seat, a reinforcing spider in the diaphragm having a hub extending into the nib and a valve unseating spring surrounding the nib interposed between the face of the diaphragm and about the valve seat.

1,158,996. Steam Heating. Alford N. Felton, Armour, S. D. In combination, in a steam heating plant having a common return pipe from all the radiators, a vacuum retaining valve, a water seal, an air escape and steam valve, a float, and a swinging bar, said float controlling said air escape and steam valve directly and said vacuum retaining valve through said swinging bar.



1,158,996



1,159,304.

1,159,304. Water Heater. Smith C. Wells, New York, N. Y. A water heater, comprising a casing of rectangular shape formed in one piece and having an interior circuitous passage for the water, means for heating the same comprising a combustion chamber in which the said water heater is arranged, an inlet pipe connected with one end of said passage, an outlet pipe leading from the other end of the said passage, means for supporting the pipes, the said pipes extending into the combustion chamber and forming a support for one end of the said water heater, suspension means connected with the said water heater at the other end there-

of, controlling valves in said pipes, and a valved blow-off pipe connected with the said outlet pipe at a point intermediate the valve of the outlet pipe and the water heater.

LAWS OF STATES ON SCHOOLHOUSE SANITATION.

Forty states of the Union have taken some legal action toward safeguarding the sanitation of public school buildings, according to a bulletin on "Schoolhouse Sanitation," just issued by the Bureau of Education of the United States Department of the Interior. "Probably nine-tenths of the existing regulation of this sort has come within the past decade," declares the bulletin. "Each state profits by the experience of 47 others. A law passed in one extreme of the country today is copied next month or next year by a state 2,000 or 3,000 miles distant."

Thirty-eight states have some legal provision regarding the school site, according to the bulletin. Nearly all of these provisions are state wide in their application and are mandatory in character. These provisions include the proximity of "nuisances," availability of the site, and size of the site. Nineteen states have laws prohibiting the location of school buildings within a specified distance from places where liquor is sold, from gambling houses, and noisy or smoky factories.

Thirty of the states have sought to regulate the water supply of the public school. "The revolt against the common drinking cup," says the bulletin, "has come within the past five years. Kansas was the pioneer, but other states followed rapidly, so that now half of the entire number have either a law or a regulation regarding drinking cups."

Some form of protection against fire and panic is found in 36 states. Blanket regulations, or the power to make such regulations, exist in 12 states. General or special construction with a view to fire prevention is dealt with in 10 states. Less than half the states, according to the bulletin, have any legal word on ventilation. In the matter of cleaning and disinfecting, slightly more than one-fourth of the states have regulations which control conditions to any degree outside the districts themselves. Some of the laws and regulations are almost model; others are wholly inadequate. A few state boards of health have done notable work in this particular. Special cleaning and disinfecting follow in seven states immediately upon discovery in any school of any of a certain class of diseases.

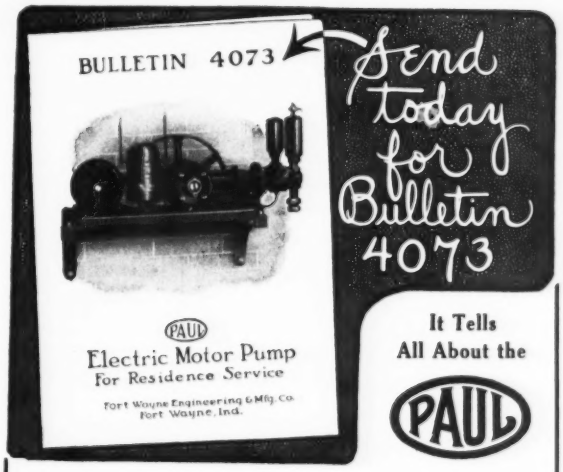
BACTERIA AND LOW TEMPERATURES.

Recent experiments show that the idea that bacteria in general are not harmed by freezing is untenable. On the other hand, the effect of very low temperatures has been greatly overestimated, an exchange states.

It has been observed that as destructive effects are produced upon bacterial life from the temperature of salt and pounded ice as from that of liquid air. The critical point appears to be somewhat about the freezing point of water. An organism that can pass this point in safety may be proof against even absolute zero.

A few individual bacteria in every culture tried were able to endure unharmed the temperature of liquid air. This is believed to have been due to the absence of water in the cells.

The city building inspector of Minneapolis, Minn., has been directed to draw plans for a new $5,000 bath house on Hall's Island.



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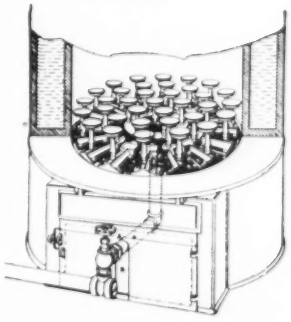

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Miscellaneous.

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Government Proposals.

TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C., November 2, 1915.—SEALED PROPOSALS will be opened in this office at 3 p. m. November 30, 1915, for changes in plumbing in the United States Post Office, Pottsville, Pa., in accordance with the drawing and specification, copies of which may be had at this office or at the office of the Custodian, in the discretion of the Supervising Architect. Jas. A. Wetmore, Acting Supervising Architect. 11-6; 13

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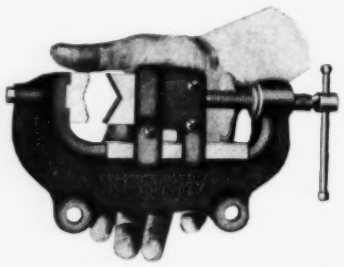

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